

B01 OF 16091 -

~~SEE BO~~

05793A

CS: 16091

ID: B01 05793A

I 16091-05793A 1&2

I 75-5(29)300

I 16093-09241A

I 75-4(39)293

IR 16091-11581A

IR 74-4(30)300

IR 16093-11580A

IR 75-4(43)293

10.6 mi. of bit. conc. surf.,
roadside safety improve., bit
base stabiliz. on the NB Rdway
and bit. base crse on the SB
Rdway on I-75 from 0.75 mile
N of Wolverine Rd. N'ly to 2.2
miles N of M-68, all in Cheboygan
County.

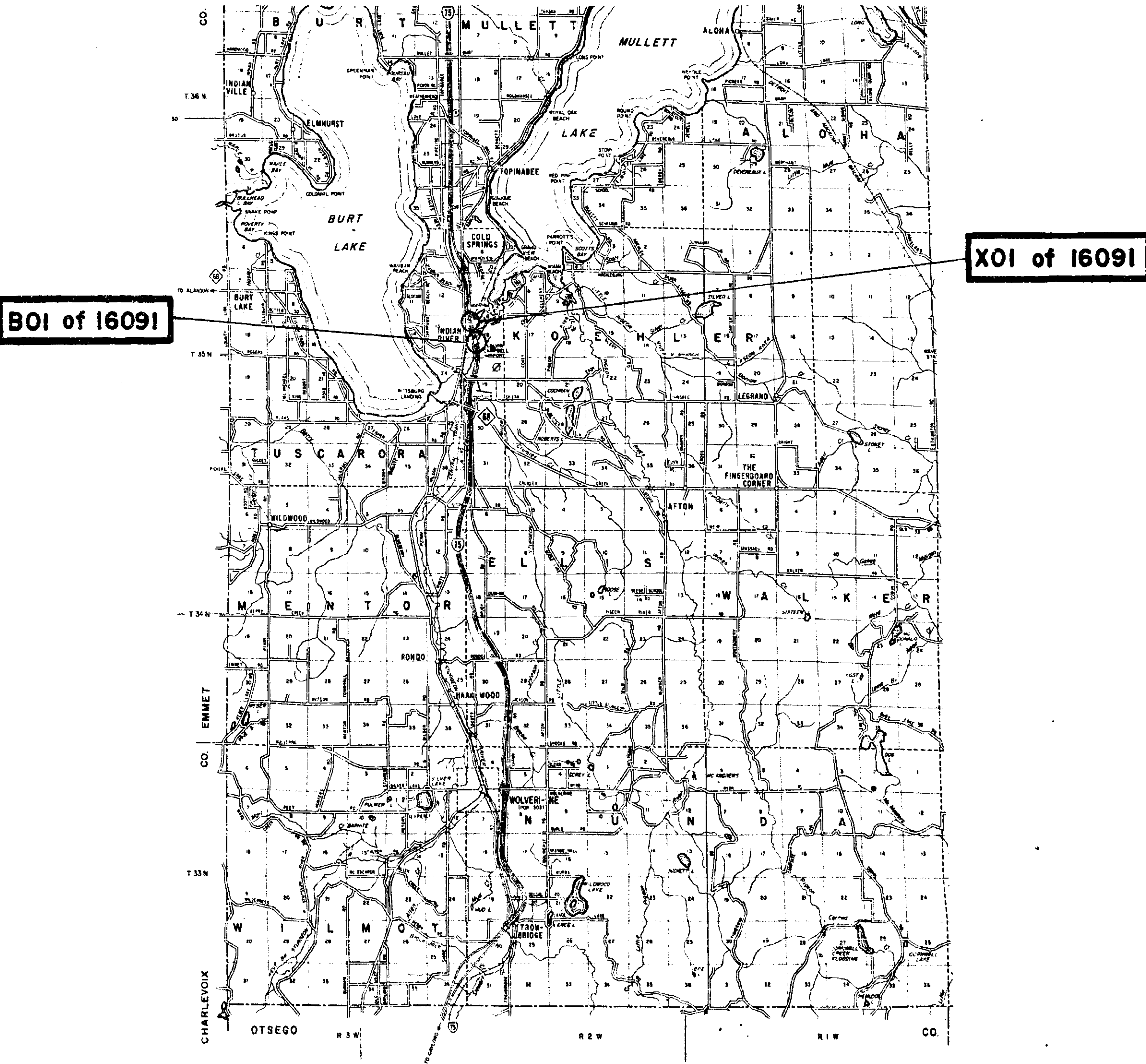
STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

PLANS OF PROPOSED BRIDGE RAILING REPLACEMENT
MICHIGAN PROJECT I-75-5(29)300
CONTROL SECTION Is 16091
JOB NUMBER 05793A
I-75
CHEBOYGAN COUNTY
TUSCARORA TOWNSHIP

PLAN INDEX	
SHEET NO.	DESCRIPTION
I	Title Sheet
IA	Quantity Sheet
IB	Bridge Approach Curb & Gutter
IC	Maintaining Traffic Diagram (typical)
ID	Maintaining Traffic Quantity Sheet
IE	Typ. Locations & Supports for Const. Signs
IF	Steel Post Details
IG	Sign Connection Details
IH	Construction Zone Sign Details

BOI of 16091	
SHEET NO.	DESCRIPTION
2	General Plan of Site
3	General Plan of Structure
4	Bridge Railing Replacement

XOI of 16091	
SHEET NO.	DESCRIPTION
2	General Plan of Site
3	General Plan of Structure
4	Bridge Railing Replacement



NOTE:
WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON THE PLANS THEY ARE TO BE CONSTRUCTED ACCORDING TO THE STANDARD PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED.

STANDARD PLANS TO BE PRINTED	
SHEET NO.	TITLE
E-4-A-133	BRIDGE APPROACH CURB AND GUTTER FOR BRIDGE-BARRIER RAILING

STANDARD PLANS NOT TO BE PRINTED	
SHEET NO.	TITLE
VI-124B	Drum Guide Rail, Drum Guide Rail Double, Drum, Timber Curb & Snow Fence, Timber Curb & Splash Boards.
VI-125C	Type II & III Barricades and Lighted Arrows.
II-52A	Portable Concrete Barrier.

GENERAL NOTES

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED THEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 1976 EDITION.

THE DESIGN OF THESE STRUCTURES IS BASED ON THE MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION SPECIFICATIONS FOR THE DESIGN OF HIGHWAY BRIDGES, 1958 EDITION AND CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES HS20-44 (AND ALTERNATE MILITARY) LOADING. LIVE LOAD PLUS IMPACT DEFLECTION DOES NOT EXCEED $\frac{1}{1000}$ OF SPAN LENGTH.

THE SOIL BORING LOGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY INFERS THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BEVELED WITH $\frac{1}{2}$ " TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

THE STATIONING AS SHOWN ON THESE PLANS FOR THE INTERSECTION OF THE CENTERLINE OF BRIDGE AND ROADWAY (AND THE RAILROAD) CENTERLINE IS BELIEVED TO BE CORRECT. IT SHALL, HOWEVER, BE CHECKED AT THE TIME OF STARTING CONSTRUCTION AND IF THE STATIONING SHOWN ON THE PLANS IS INCORRECT, IT SHALL BE REPORTED TO THE DESIGN OFFICE AT LANSING AND THE STRUCTURE SHALL BE STAKED OUT USING THE ACTUAL INTERSECTION OF THE CENTERLINE OF BRIDGE AND ROADWAY (AND THE RAILROAD) CENTERLINE AS THE CONTROL POINT.

THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF THE FOLLOWING GRADES AND STRESSES:

CONCRETE: GRADES 355, 450 f'_c = 3,000 psi

STEEL REINFORCEMENT: f_y = 60,000 psi

STRUCTURAL STEEL: A36 f_y = 36,000 psi

STRUCTURAL STEEL: A588 f_y = 50,000 psi

PRESTRESSED CONCRETE: f'_c = 5,000 psi

PRESTRESSING STRANDS: f'_s = 270,000 psi

THE EXISTING STRUCTURE SHALL BE CHECKED AT THE TIME OF STARTING CONSTRUCTION TO SEE THAT ITS RELATIONSHIP TO THE PROPOSED WORK IS AS SHOWN ON THESE PLANS AND ANY DIFFERENCES REQUIRING CHANGES IN THE NEW WORK SHALL BE REPORTED TO THE DESIGN OFFICE.

ITEM NO. 72070

CONTRACT FOR	
APPROVALS	
CHECKED	ENGINEER-BRIDGE DESIGN
RECOMMENDED FOR APPROVAL	ENGINEER OF DESIGN
RECOMMENDED FOR APPROVAL	ENGINEER OF TRAFFIC & SAFETY
RECOMMENDED FOR APPROVAL	ENGINEER OF CONSTRUCTION

DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION
JOHN P. WOODFORD - DIRECTOR

APPROVED BY: _____
DEPUTY DIRECTOR - HIGHWAYS

PLANS PREPARED BY: _____
MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

SQUAD: RUSSMAN

Is 16091

JOB NUMBER	FEDERAL PROJECT	SHEET NO.
05793A	I-75-5(29)300	1

Is 16091 .. 05793A

ITEM	UNIT	CONTR. QUANT.	FINAL QUANT.	UNIT PRICE	FINAL COST	B01 of 16091		05793A		X01 of 16091		05793A		CONTR. QUANT.		REMARKS (AUTH. NO'S)		FINAL QUANT.		FINAL COST		CONTR. QUANT.		REMARKS (AUTH. NO'S)		FINAL QUANT.		FINAL COST		PLAN EXTRAS		
						CONTR. QUANT.	REMARKS (AUTH. NO'S)	FINAL QUANT.	FINAL COST	CONTR. QUANT.	REMARKS (AUTH. NO'S)	FINAL QUANT.	FINAL COST	CONTR. QUANT.	REMARKS (AUTH. NO'S)	FINAL QUANT.	FINAL COST	CONTR. QUANT.	REMARKS (AUTH. NO'S)	FINAL QUANT.	FINAL COST	DATE	DESCRIPTION	UNIT	QUANTITY	ESTIMATE	FINAL					
Steel Reinforcement	LBS.	11,507	11,521.5		2809			1007	5617		5879			1007	5764																	
Two Component Polyurethane Cold Applied Joint Sealant	LF	10	12.0		5			1007	4		5			1007	2																	
1/2 Expansion Anchored Bolts	Each	958	971.5		466			1007	473		492			1007	432																	
Bridge Approach Curb & Gutter	LF	176	180.4		88			1007	91		88			1007	95																	
Concrete Barrier Bridges (Type I mod.)	LF	1476	1416.4		100				760		756																					
End Blocks	Each	16	16.4		8				8		8																					
Revision to Existing Exp. Joint (B01 of 16091)	L.S.	Lump Sum	1		Lump Sum				1																							
Revision to Existing Exp. Joint (X01 of 16091)	L.S.	Lump Sum	1						Lump Sum					1																		
Removal of Portions of Structure (B01 of 16091)	L.S.	Lump Sum	1		Lump Sum				1																							
Removal of Portions of Structure (X01 of 16091)	L.S.	Lump Sum	1						Lump Sum					1																		

CHECKED
CONTRACT SECTION
DATE 3-1-79 del

**MICHIGAN DEPARTMENT OF STATE HIGHWAYS
AND TRANSPORTATION**

QUANTITY SHEET

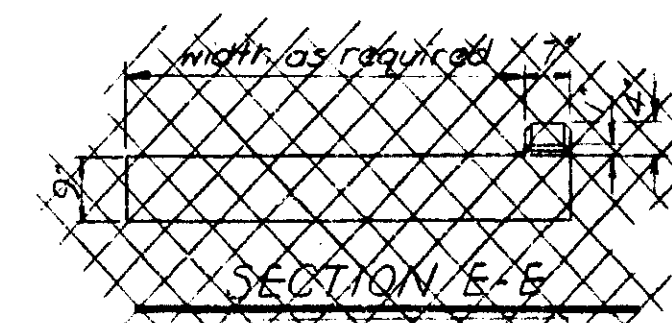
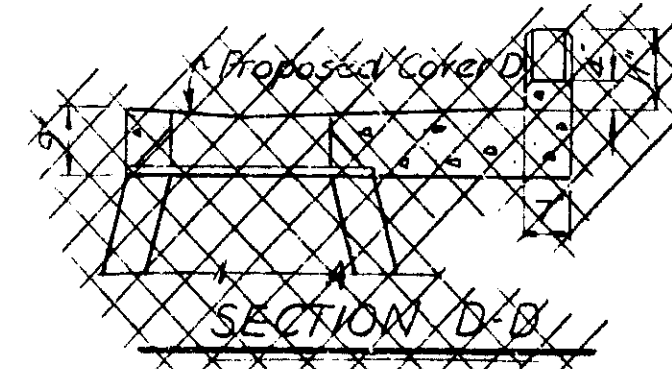
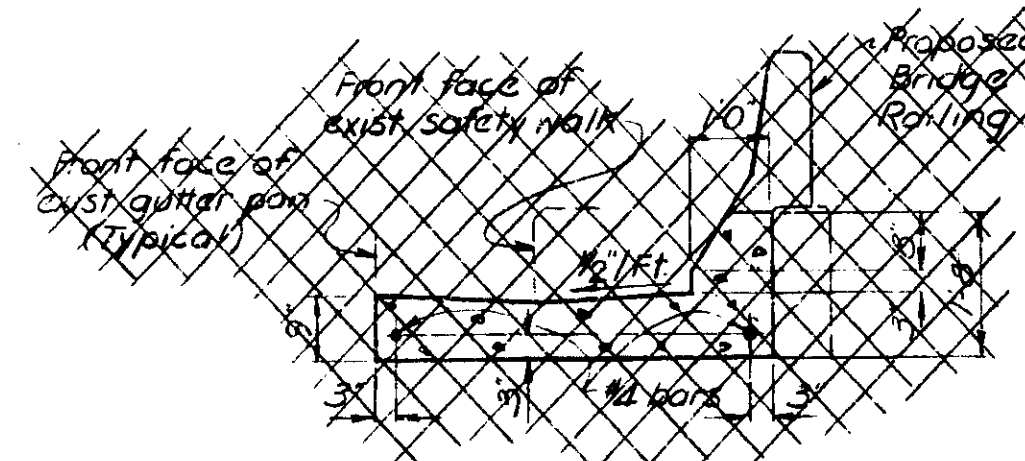
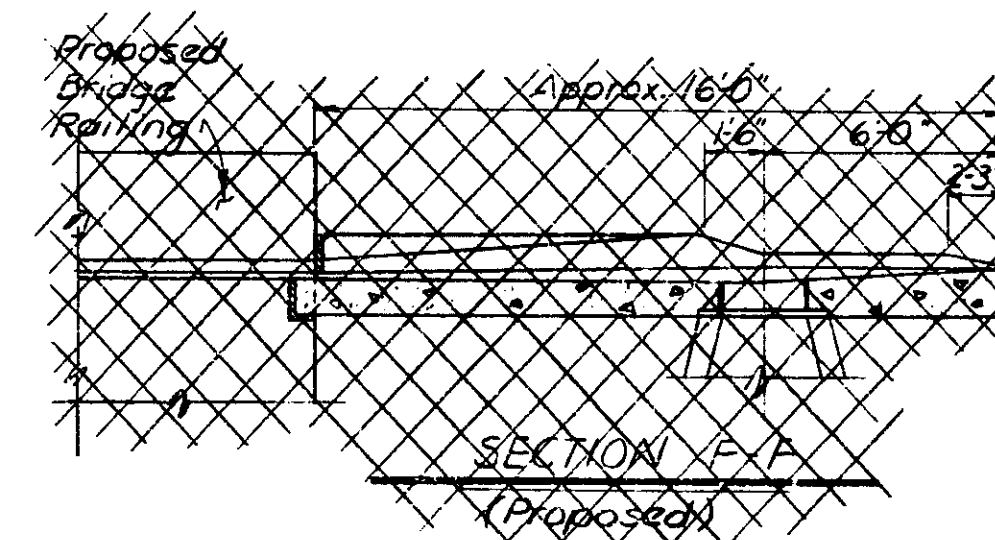
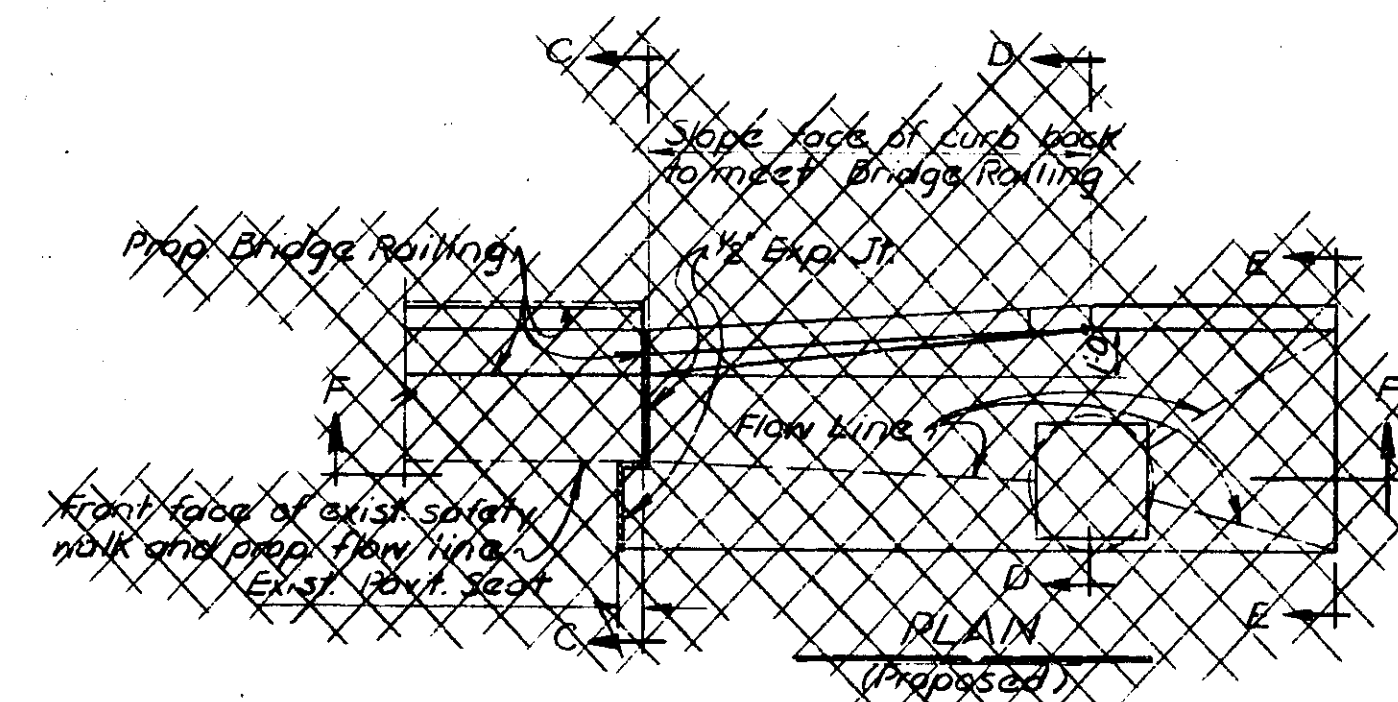
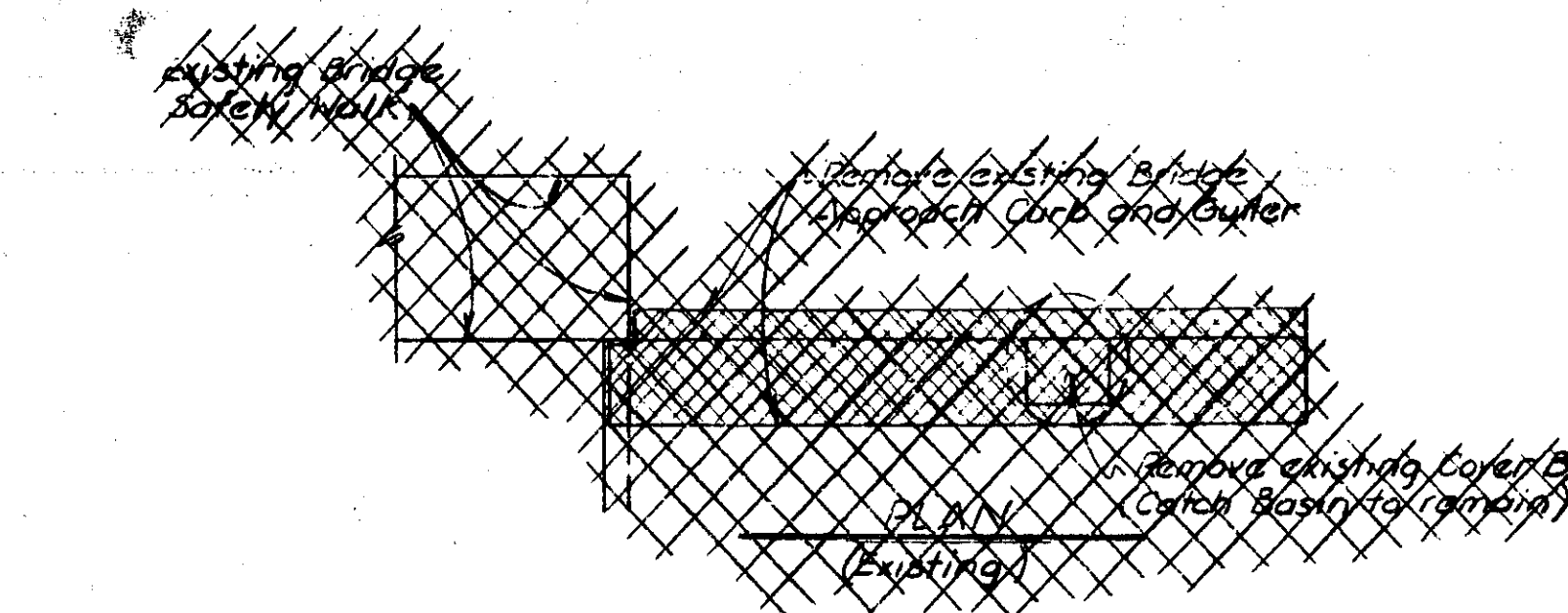
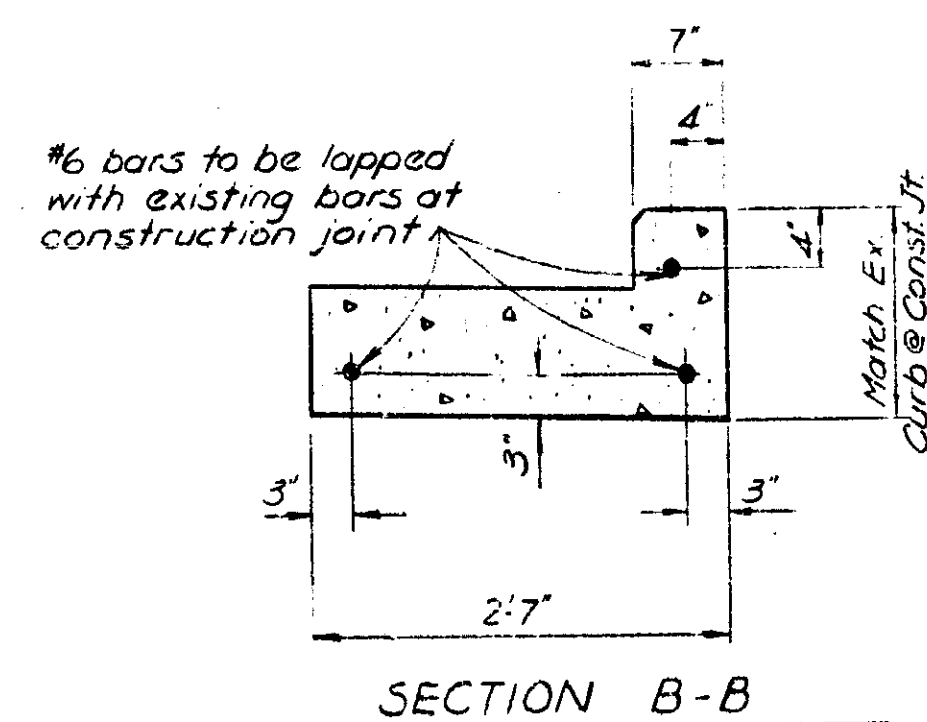
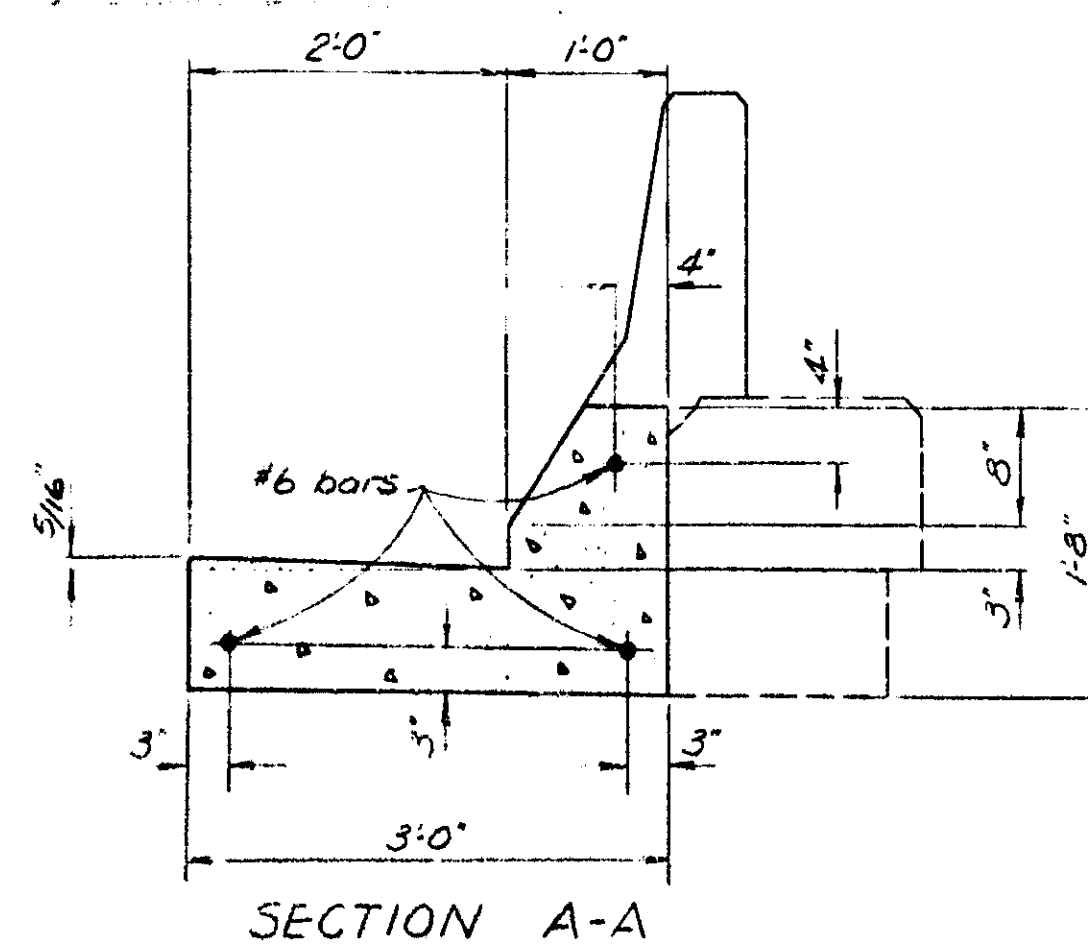
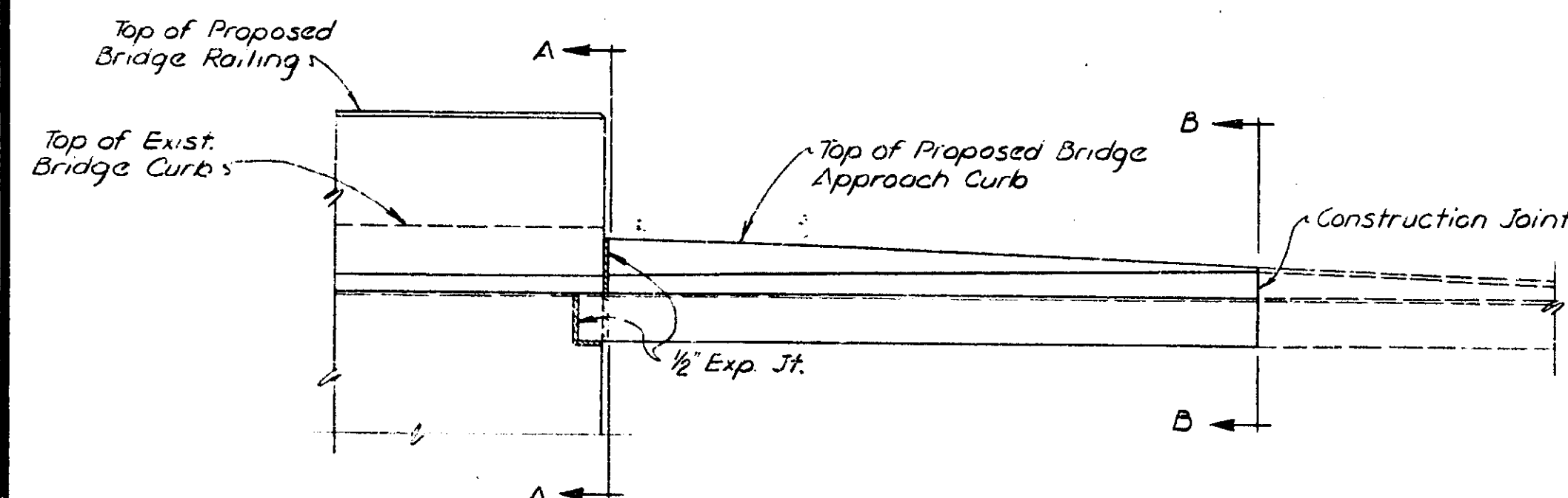
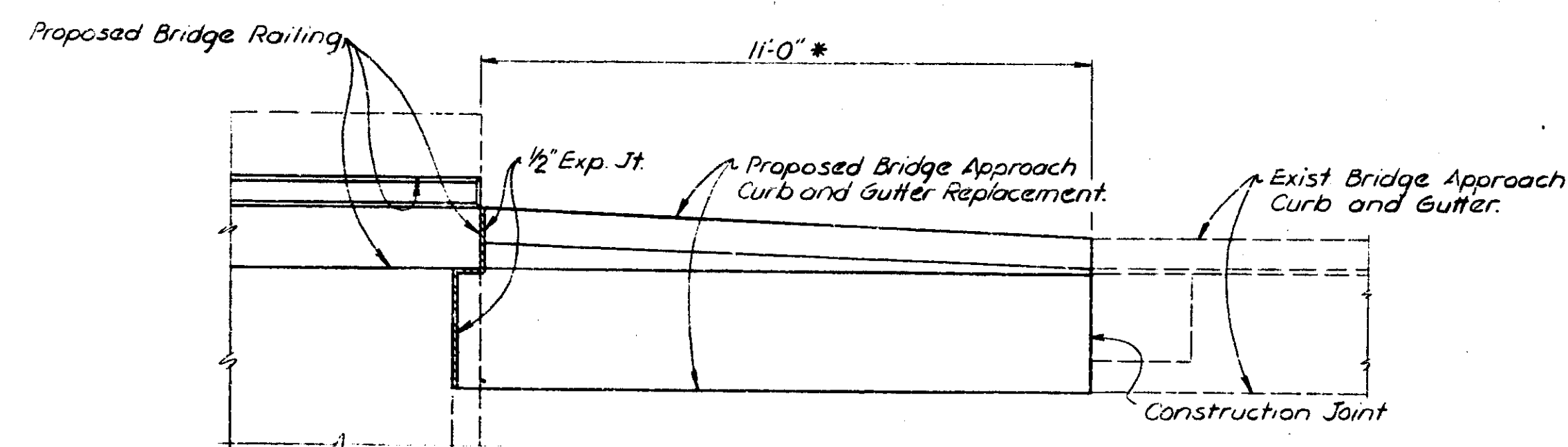
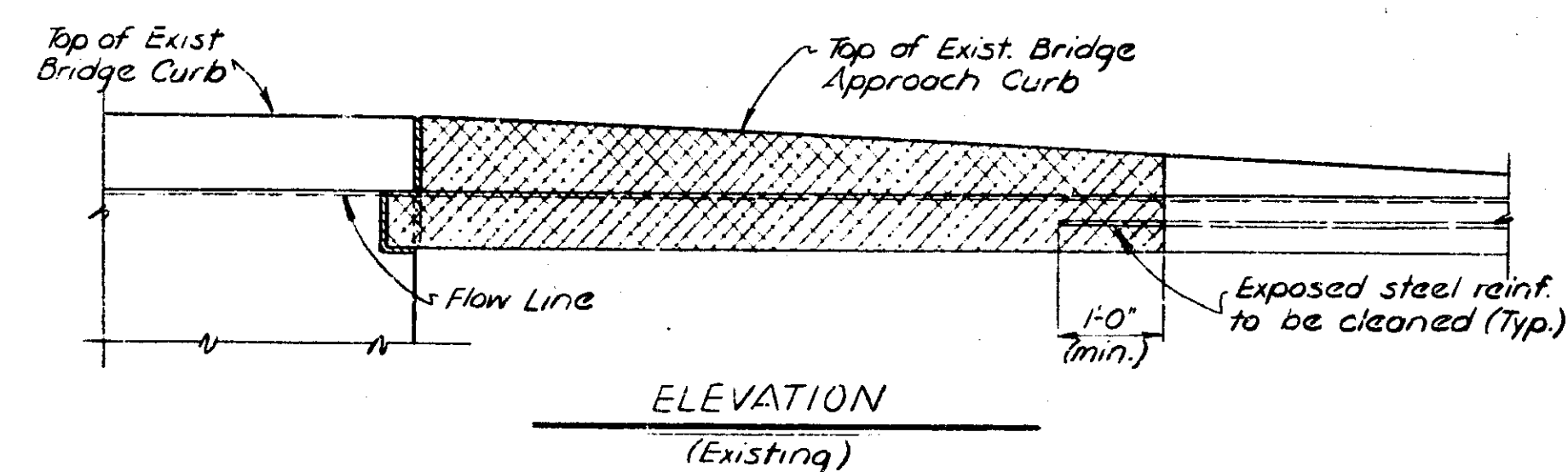
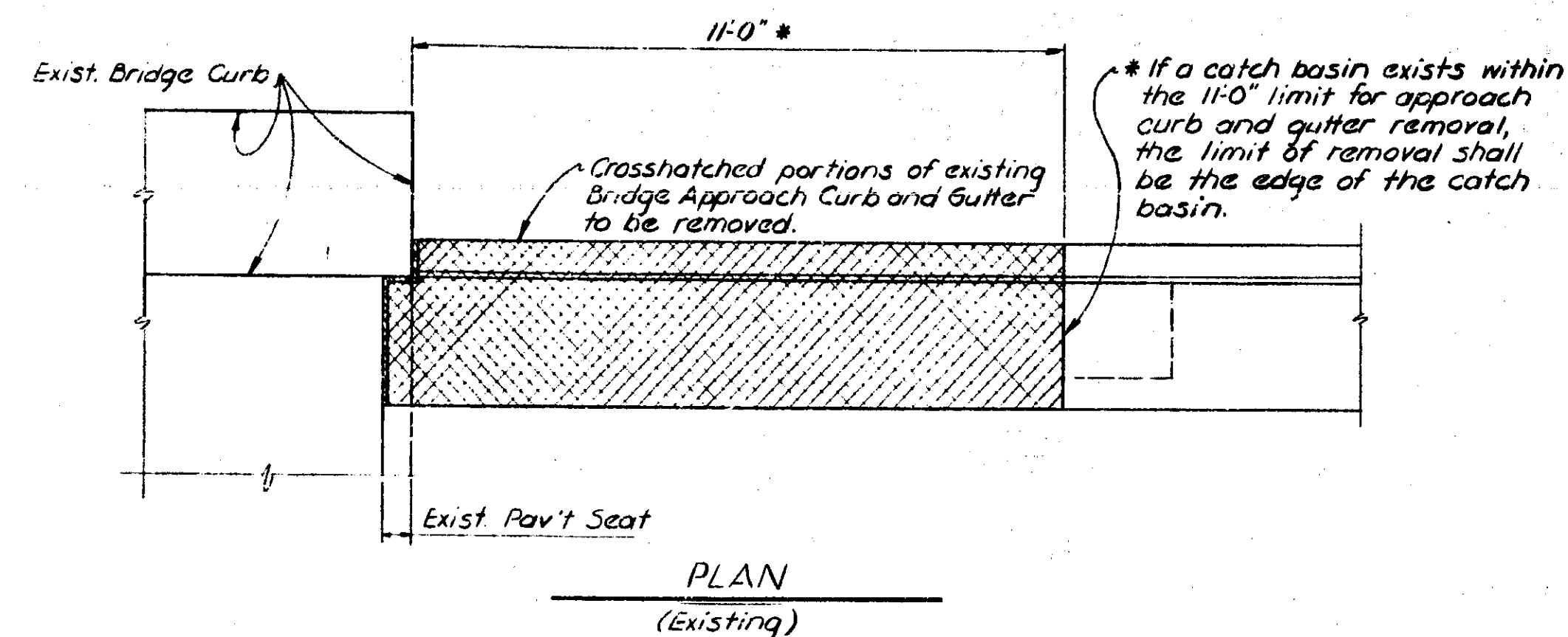
CONTROL SECTION Is 16091

SQUAD BOSS	Russman	10-7-76
DRAWN BY		
TRACED BY		
CHECKED BY	Merckert	10-6-76

SHEET 1 A OF

05793A

RM (10-23-74)



NOTES.

All materials and workmanship shall be in accordance with the current Standard Specifications for concrete curb and gutter.

The curb and gutter shall be aligned to the beam guard rail as shown on Standard Plan Div. III-6B series and independent of the edge of the pavement. The area between the edge of the pavement and the gutter shall be surfaced with the same material as the shoulders, except in the case of aggregate shoulders a bituminous treatment will be required.

Bridge Approach Curb and Gutter will be paid for at the contract unit price per foot. Bridge Approach Curb and Gutter shall be measured in feet along the the flow line of the curb.

Removal of existing curb and gutter is incidental to Bridge Approach, Curb and Gutter.

All expansion joints required will be incidental to Bridge Approach Curb and Gutter.

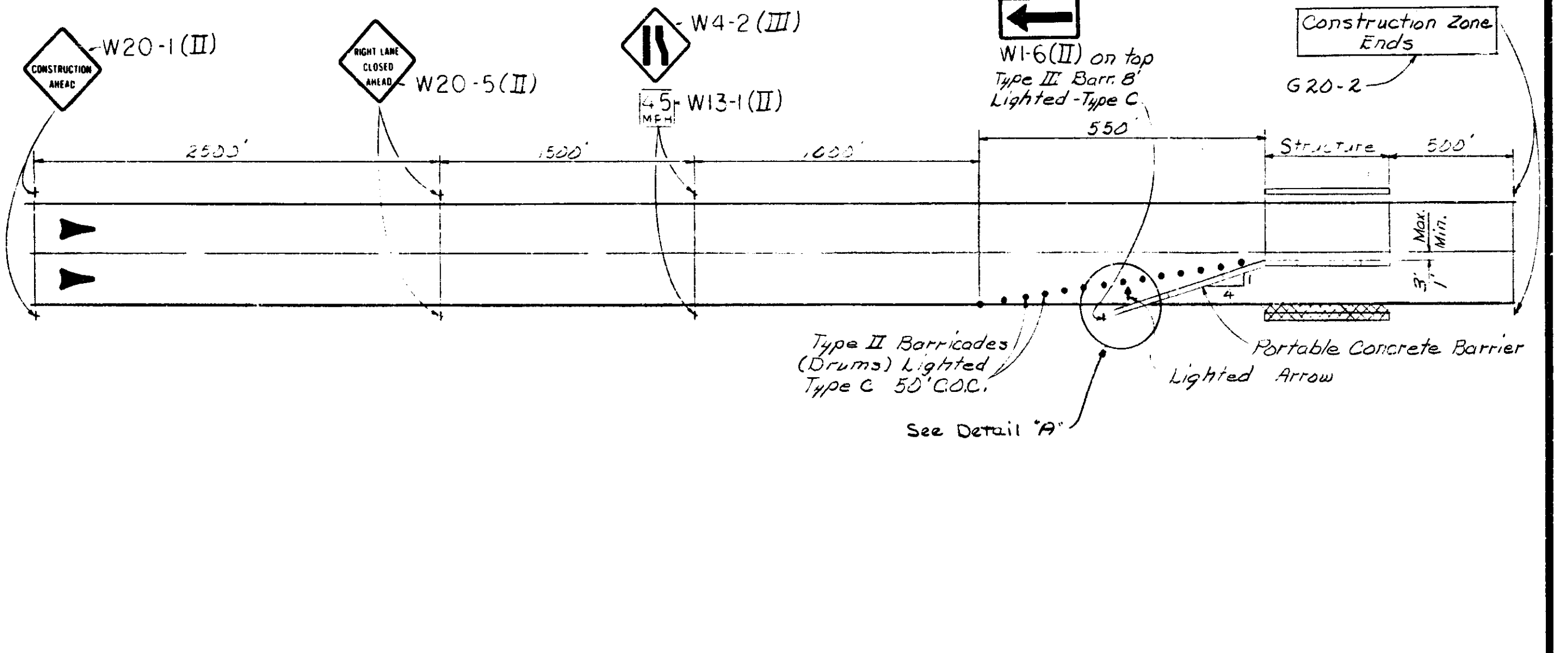
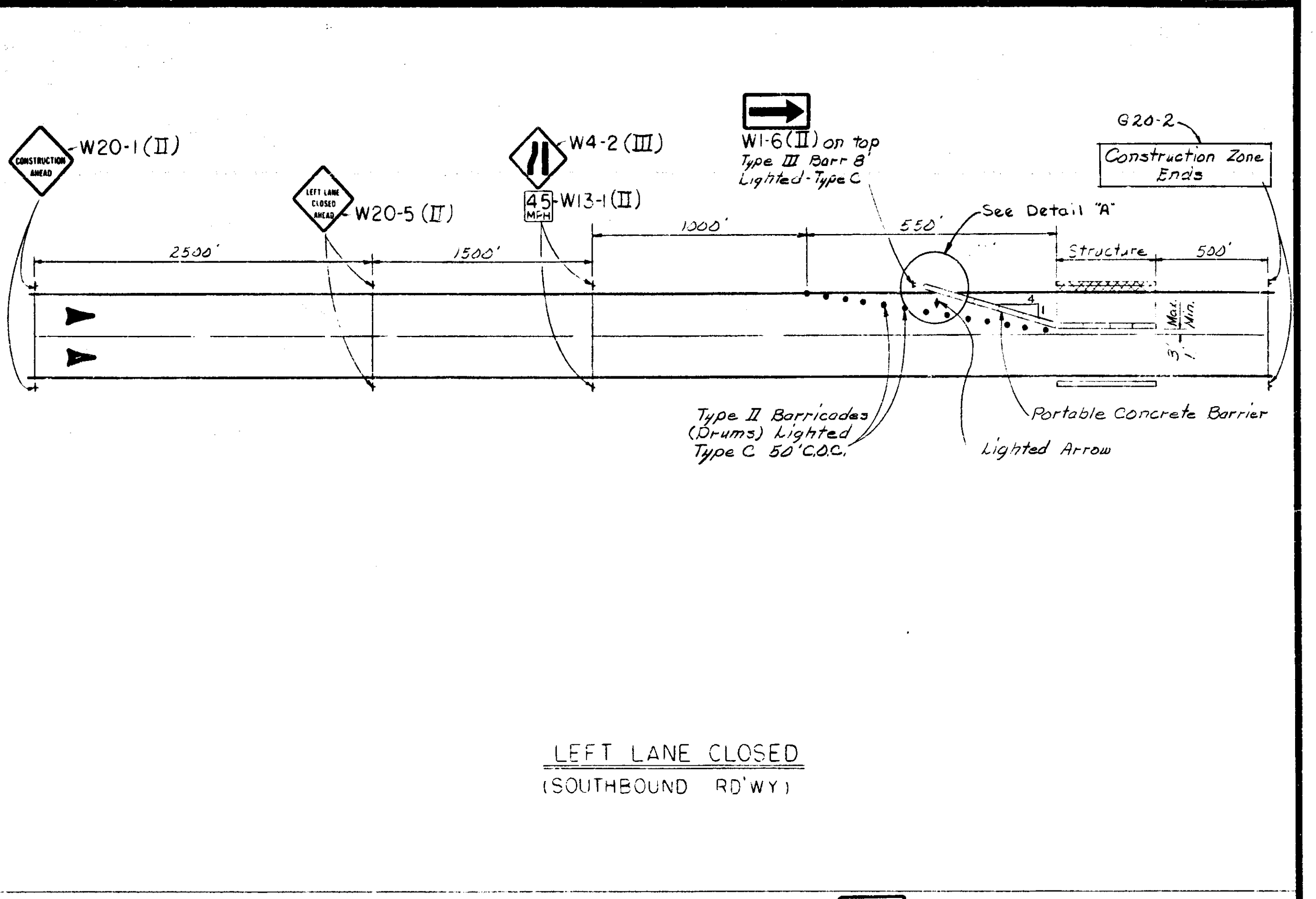
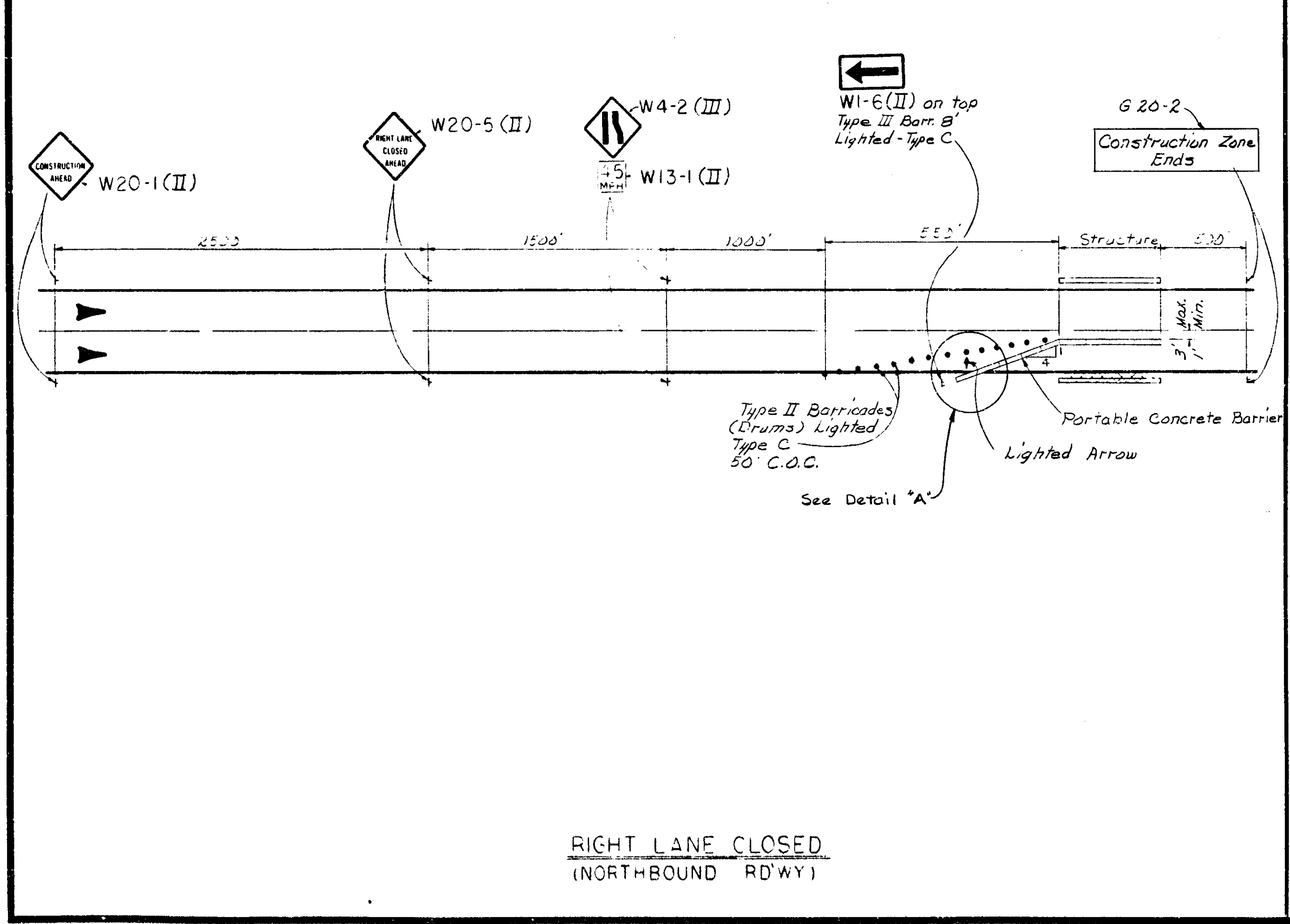
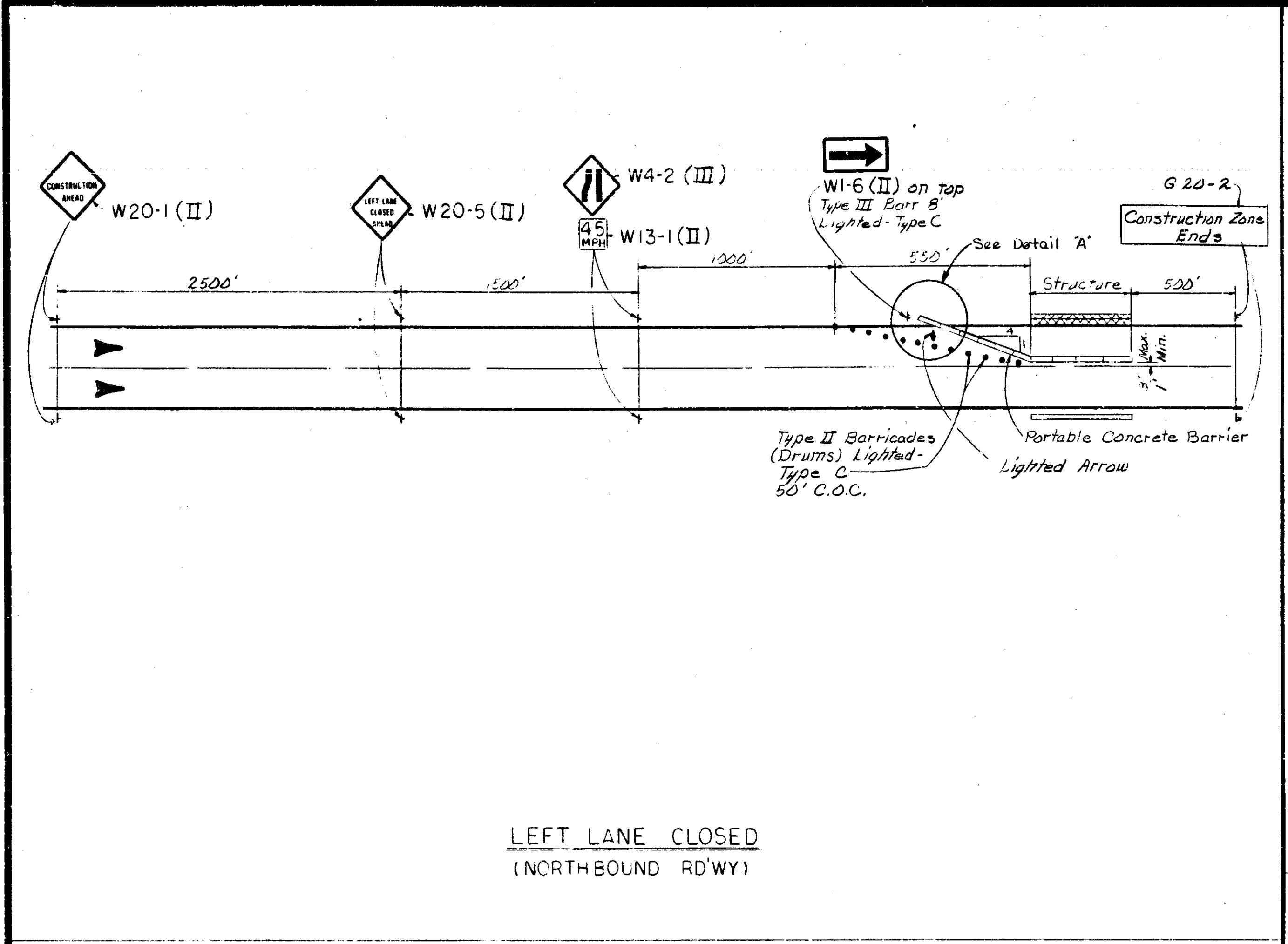
~~Proposed Cover D shall be paid for as Drainage Structure Covers at the contract unit price per pound, based on 455 pounds each.~~

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
AND TRANSPORTATION
BRIDGE APPROACH CURB AND GUTTER

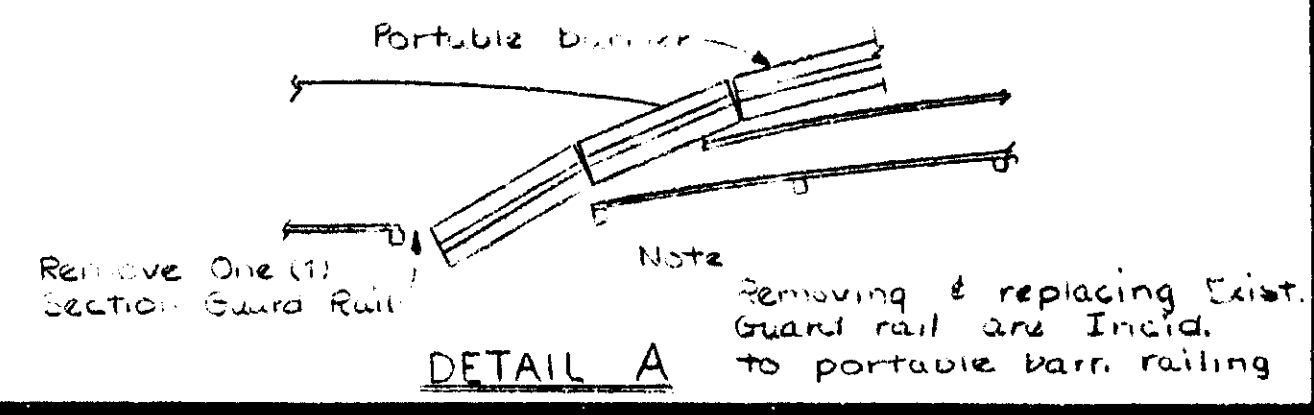
REVISIONS			
NO.	DESCRIPTION	DATE	BY

ISSUED BY	Russman	3-9-7
DRAWN BY	W. Brown	7-25
TRACED BY		
CHECKED BY	Kercher	12-11-7
SHORT 1B 'C		
16091		

05793A



- NOTES:
- W20-5 (II) Overlay "Right" with "Left" or "Left" with "Right" shall be incidental to the sign.
 - W4-2 (III) When a lane closure changes from Right to Left this sign will be erected on existing supports (only the W4-2 will be paid for additional).
 - Use 2 - 2" (10LFT) Steel Post for Barricade Mounted Signs
3 - 2" (99LFT) Steel Post for G20-2
2 - 3" (30LFT) Steel Post for 48" Warning Signs



MICHIGAN DEPARTMENT OF STATE HIGHWAYS MAINTAINING TRAFFIC DIAGRAM			
REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	Original	12-9-76	
2	Revised	12-13-76	
3	Revised	7-30-75	

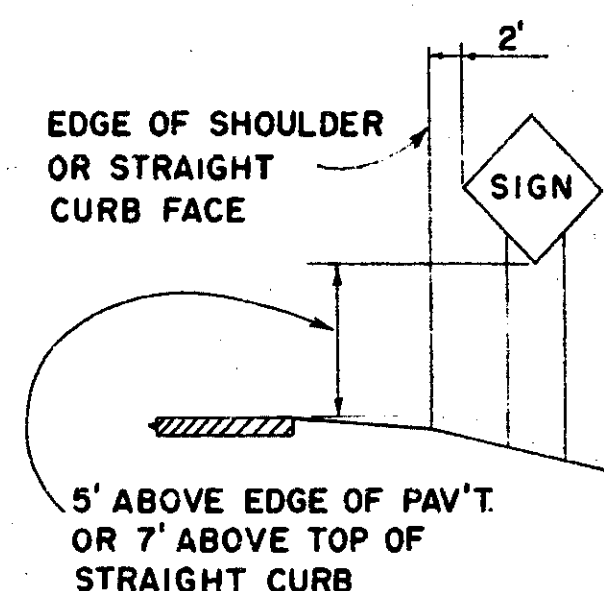
16091
05793A

QUANTITY (CONSTRUCTION TRAFFIC CONTROL DEVICES) (For Information only) (see Road Plans)

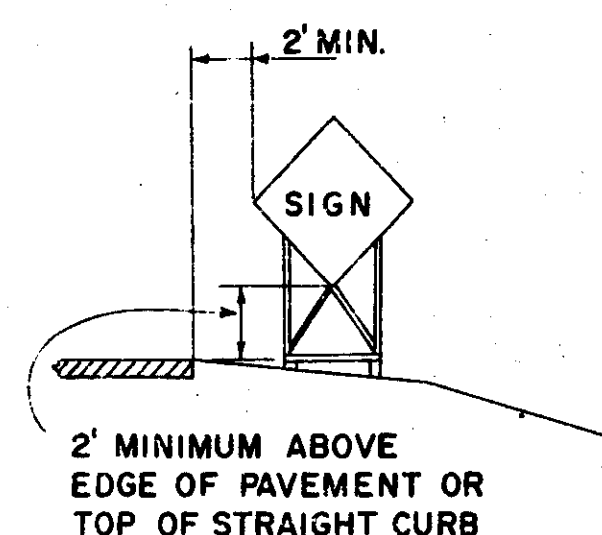
CONST. STAGE NO.		PLAN SHEET NO.		TEMP PAVT MARKING (Sta)		LIGHTED ARROW (Ea.)				BARRICADES (Ea)			(Lft)	(Lft)	(Ea)	(Ea)	SIGN AREA TEMPORARY (Sft)										POST LENGTH TEMPORARY (Lft)																	ROUTE	COUNTY	CONTROL SECTION	JOB NO.			

☐ These quantities are the maximum amount required at any one time and will not be paid for again at other locations.

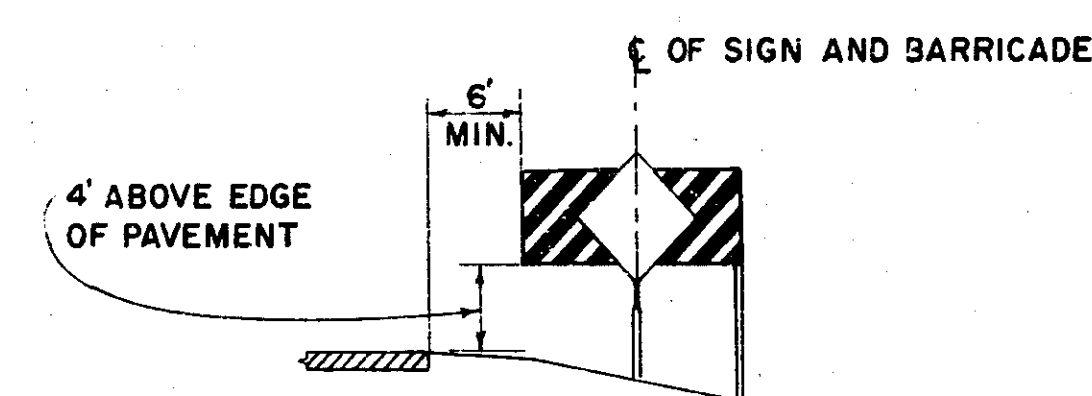
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SIGN LOCATION



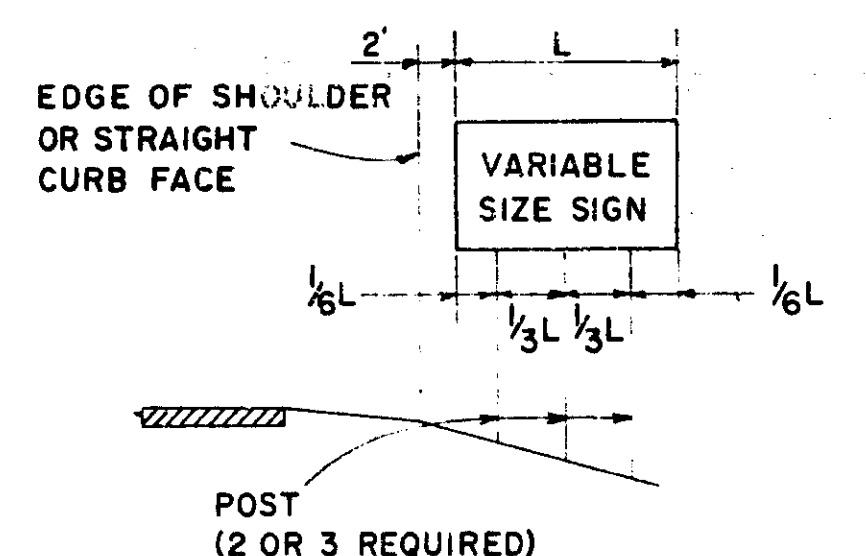
SIGN LOCATION



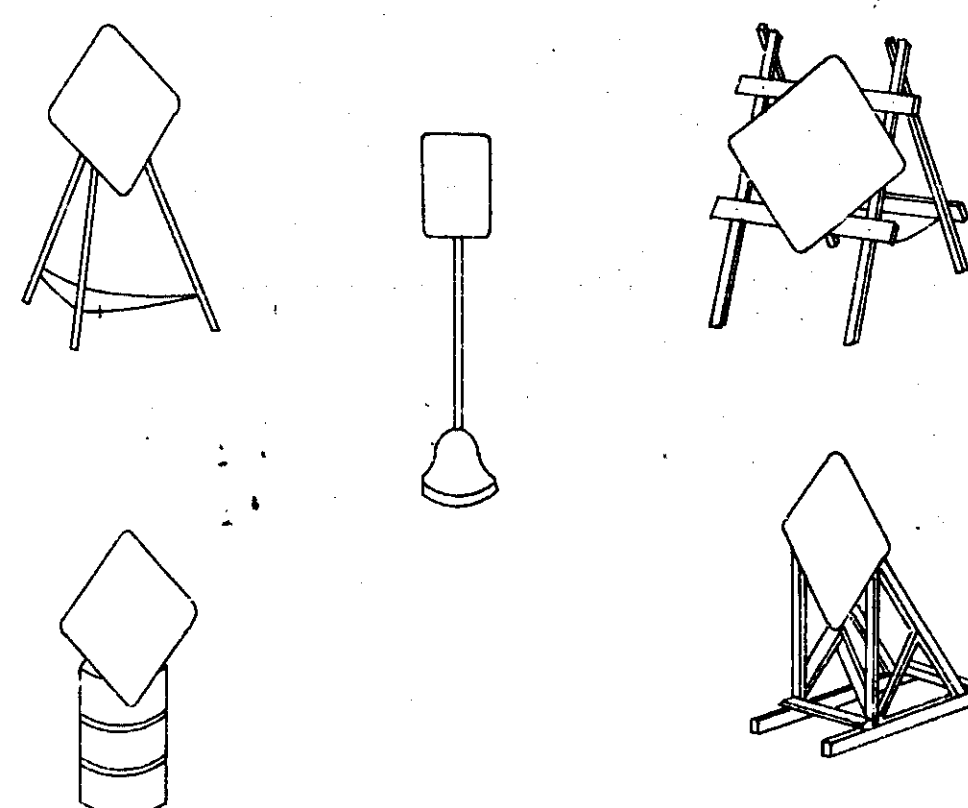
BARRICADE LOCATION

SEE STANDARD PLAN S6001
FOR DETAIL OF FABRICATION
AND INSTALLATION OF SWING-
ING BARRICADES.

**SIGNS ON
SWINGING BARRICADES**
(FOR USE ON SHOULDERS ONLY)



**SUPPORT LOCATION
FOR VARIABLE SIZE SIGN**



**TYPICAL PORTABLE AND
TEMPORARY MOUNTINGS**

NOTES:

1. WHEN CALLED FOR ON SIGN LOCATION PLANS, LATERAL CLEARANCE MAY BE DECREASED TO A MINIMUM OF 6 FEET BETWEEN EDGE OF PAVEMENT AND NEAREST EDGE OF SIGN. (APPLICABLE ONLY WHERE SHOULDERS EXIST)
2. SUPPORT LOCATION FOR SIGNS HAVING FIXED DIMENSIONS SHALL BE CONTROLLED BY HOLE LOCATION INDICATED ON STANDARD SIGN PLAN.

NOTES:

1. EXACT TYPE OF PORTABLE OR TEMPORARY MOUNTING TO BE USED ON A SPECIFIC PROJECT SHALL BE APPROVED BY THE PROJECT ENGINEER.
2. WHEN CALLED FOR ON SIGN LOCATION PLANS, SIGNS ON PORTABLE OR TEMPORARY MOUNTINGS MAY BE PLACED WITHIN THE TRAVELED PORTION OF THE ROADWAY.

GENERAL NOTES:

1. SUPPORTS FOR SIGNS SHALL BE SO PLACED THAT SIGN FACES WILL, AS NEARLY AS PRACTICABLE, BE AT RIGHT ANGLES TO APPROACHING TRAFFIC.
2. SEMI-PERMANENT SUPPORTS WILL BE PAID FOR AS "POST" OF THE WEIGHT AND MATERIAL SPECIFIED AT THE CONTRACT UNIT PRICE PER LINEAL FOOT. SIGNS WILL BE PAID FOR AS "SIGN" OF THE TYPE OF SIGN PANEL AND TYPE OF SIGN FACE SPECIFIED AT THE CONTRACT UNIT PRICE PER SQUARE FOOT. PORTABLE AND TEMPORARY MOUNTINGS FOR SIGNS ARE INCIDENTAL TO "SIGN".
3. SWINGING BARRICADES (EXCLUDING SIGN) WILL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH.
4. SEE STANDARD PLANS S9.20 AND S9.30 FOR MISCELLANEOUS SIGN CONNECTION DETAILS.

**SIGNS ON
SEMI-PERMANENT
SUPPORTS (2"3"4"6"8"POST)**

**SIGNS ON
PORTABLE SUPPORTS**

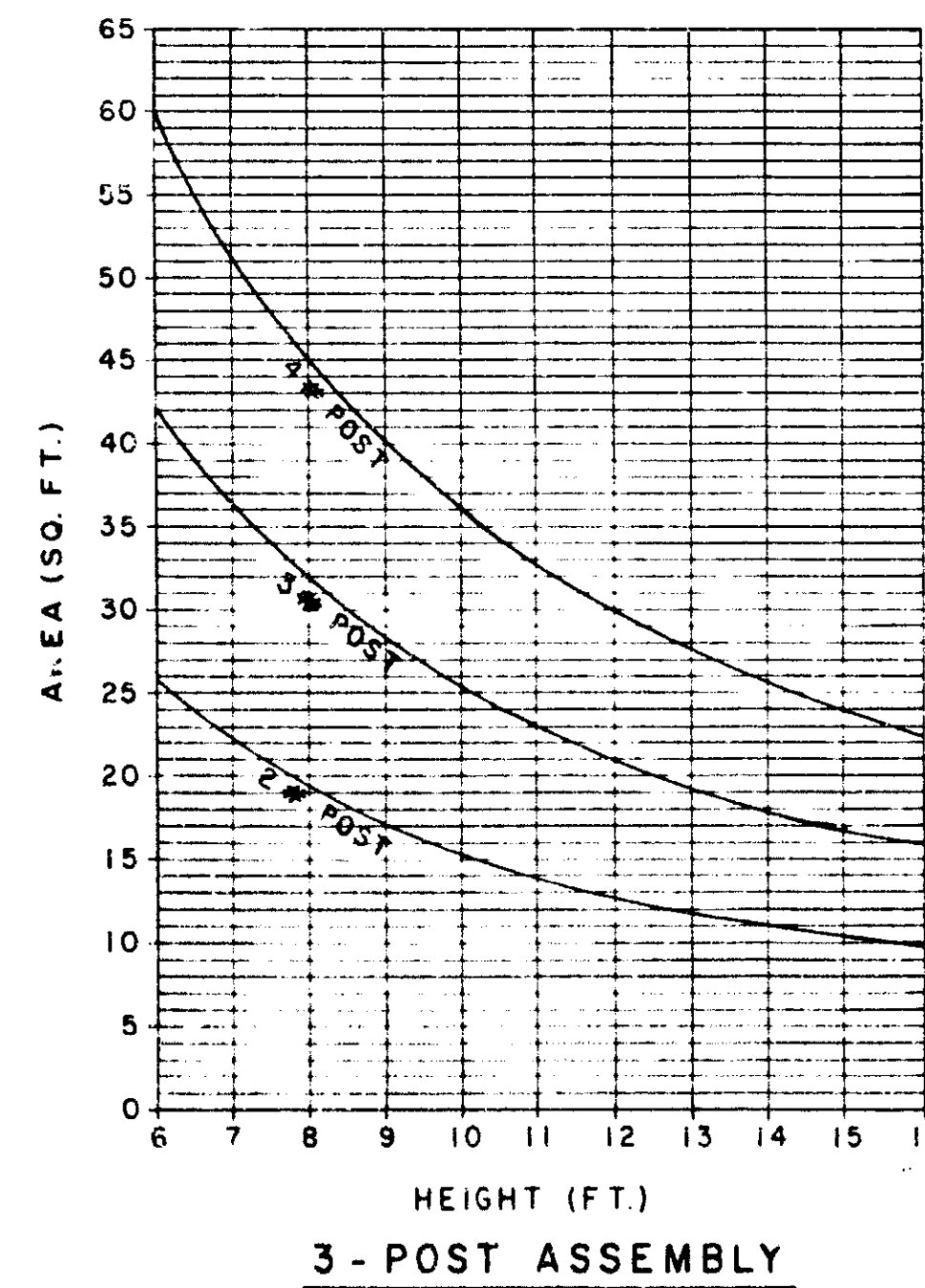
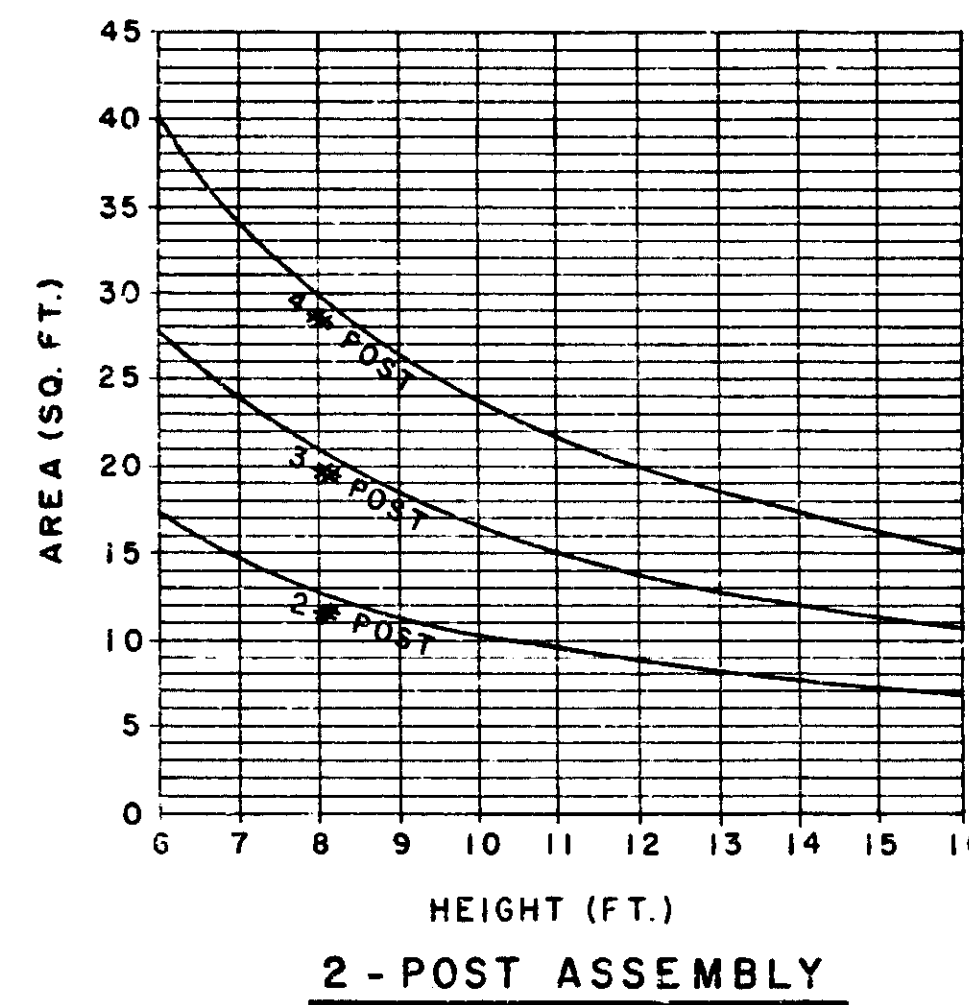
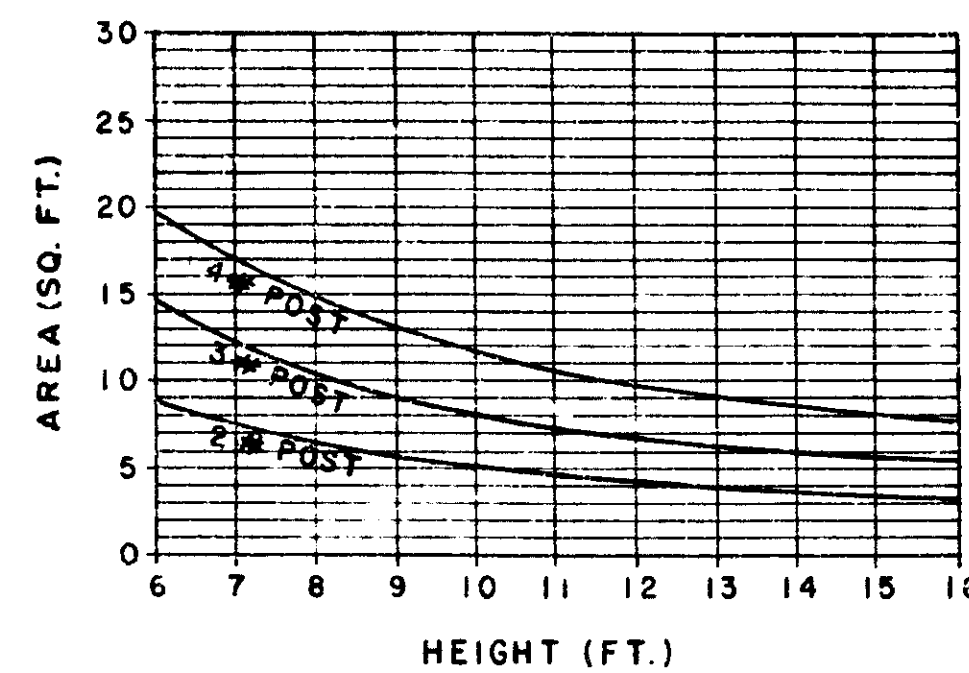
**MICHIGAN DEPARTMENT OF STATE HIGHWAYS
TYPICAL LOCATIONS & SUPPORTS
FOR CONSTRUCTION SIGNS**

REVISIONS			
NO.	DESCRIPTION	DATE	BY

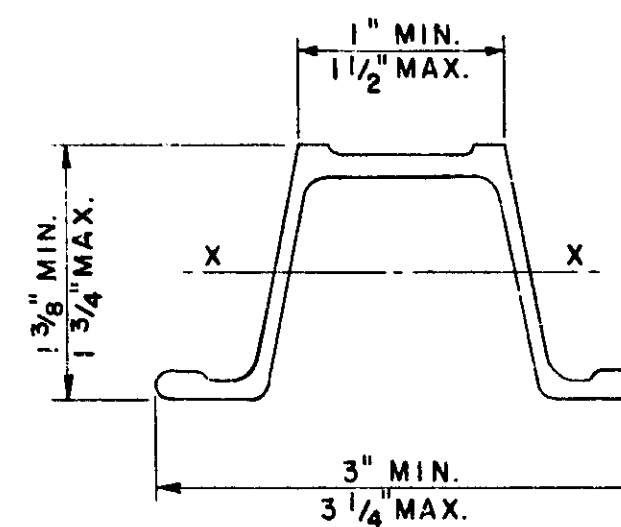
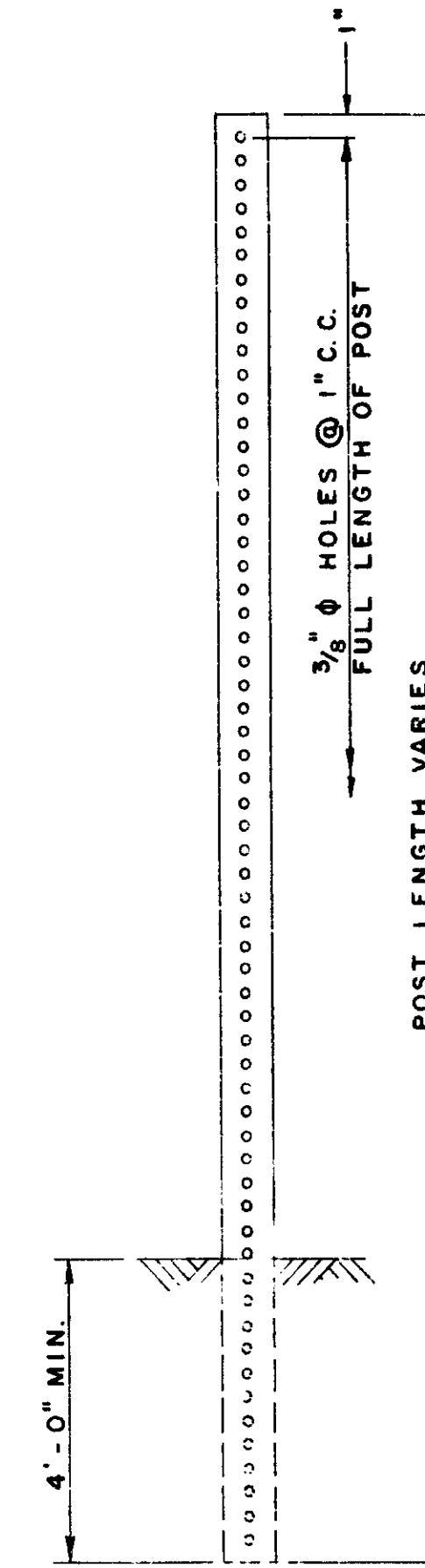
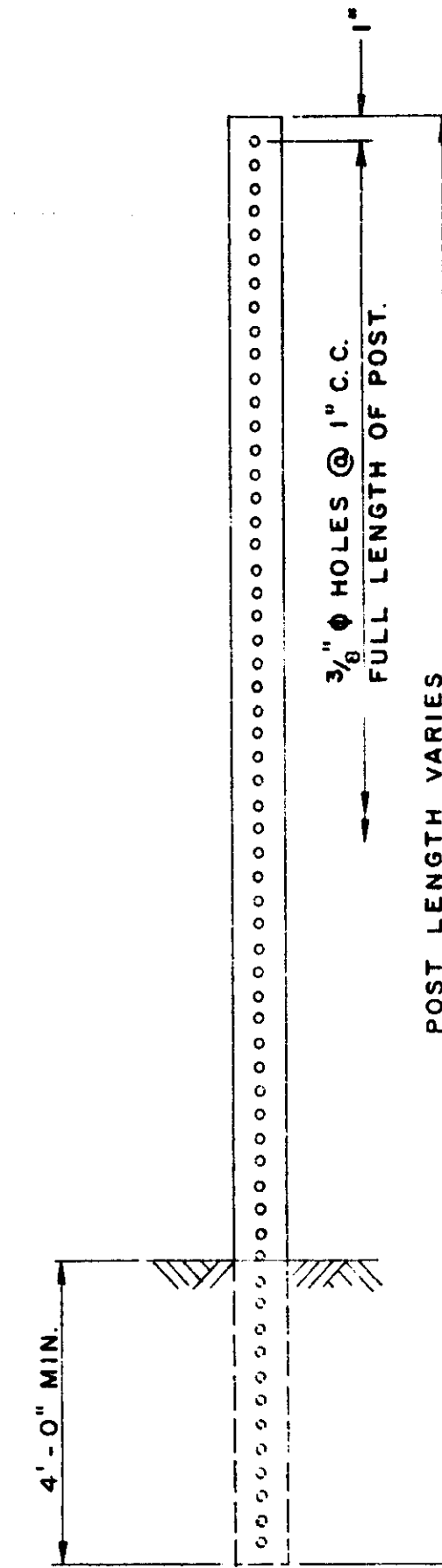
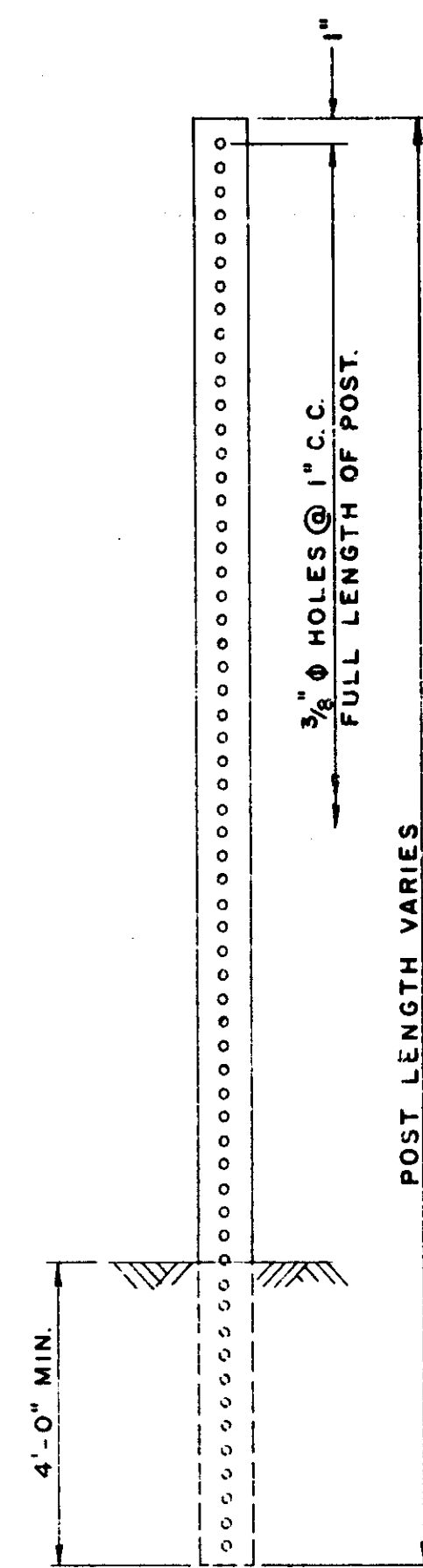
DESIGNED BY	
DRAWN BY	
CHECKED BY	
DATE	
SHEET	15 OF 15

16091

05793A

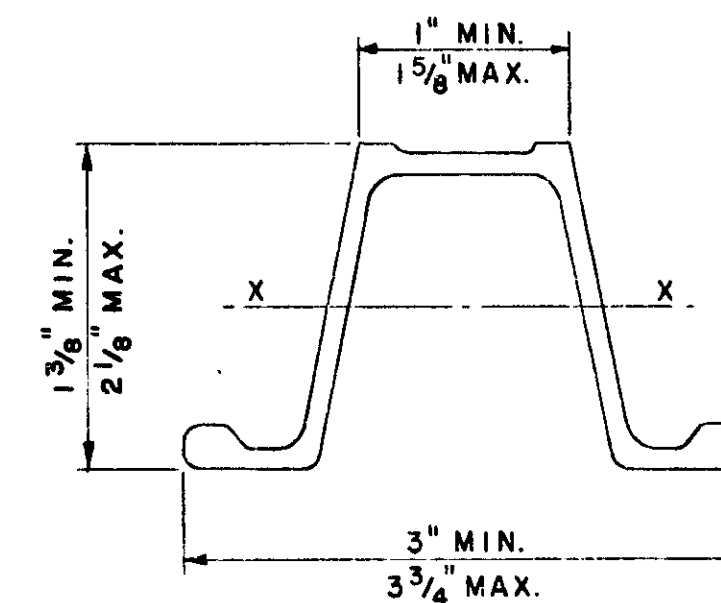


HEIGHT = DISTANCE FROM GROUND TO CENTER OF SIGN OR SIGN CLUSTER.



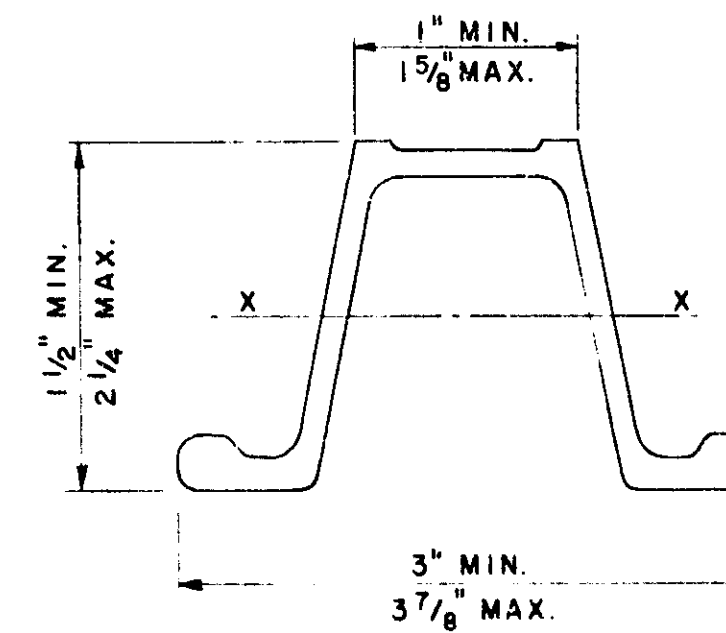
WEIGHT = 2 LB/FT MIN.
SECTION MODULUS X-X = 0.19 IN.³ MIN.

2# STEEL POST



WEIGHT = 3 LB/FT MIN.
SECTION MODULUS X-X = 0.31 IN.³ MIN.

3# STEEL POST



WEIGHT = 4 LB/FT MIN.
SECTION MODULUS X-X = 0.44 IN.³ MIN.

4# STEEL POST

NOTES:
(1) POST SHALL BE GALVANIZED.
(2) SEE STANDARD PLAN S 9.20 FOR SIGN CONNECTION.

MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

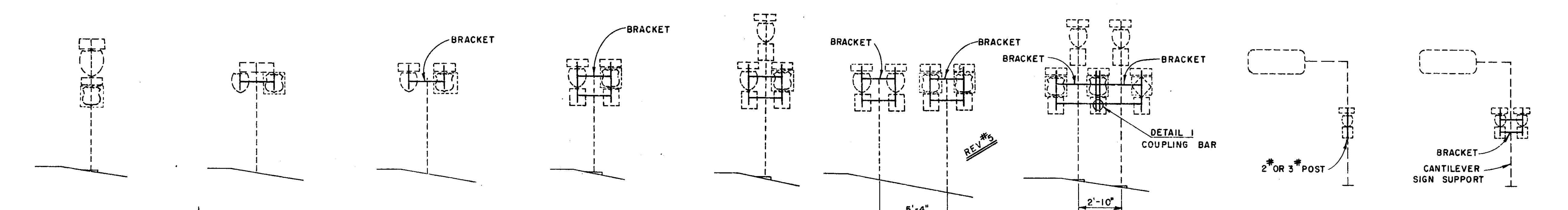
STEEL POST

REVISIONS			
NO.	DESCRIPTION	DATE	BY

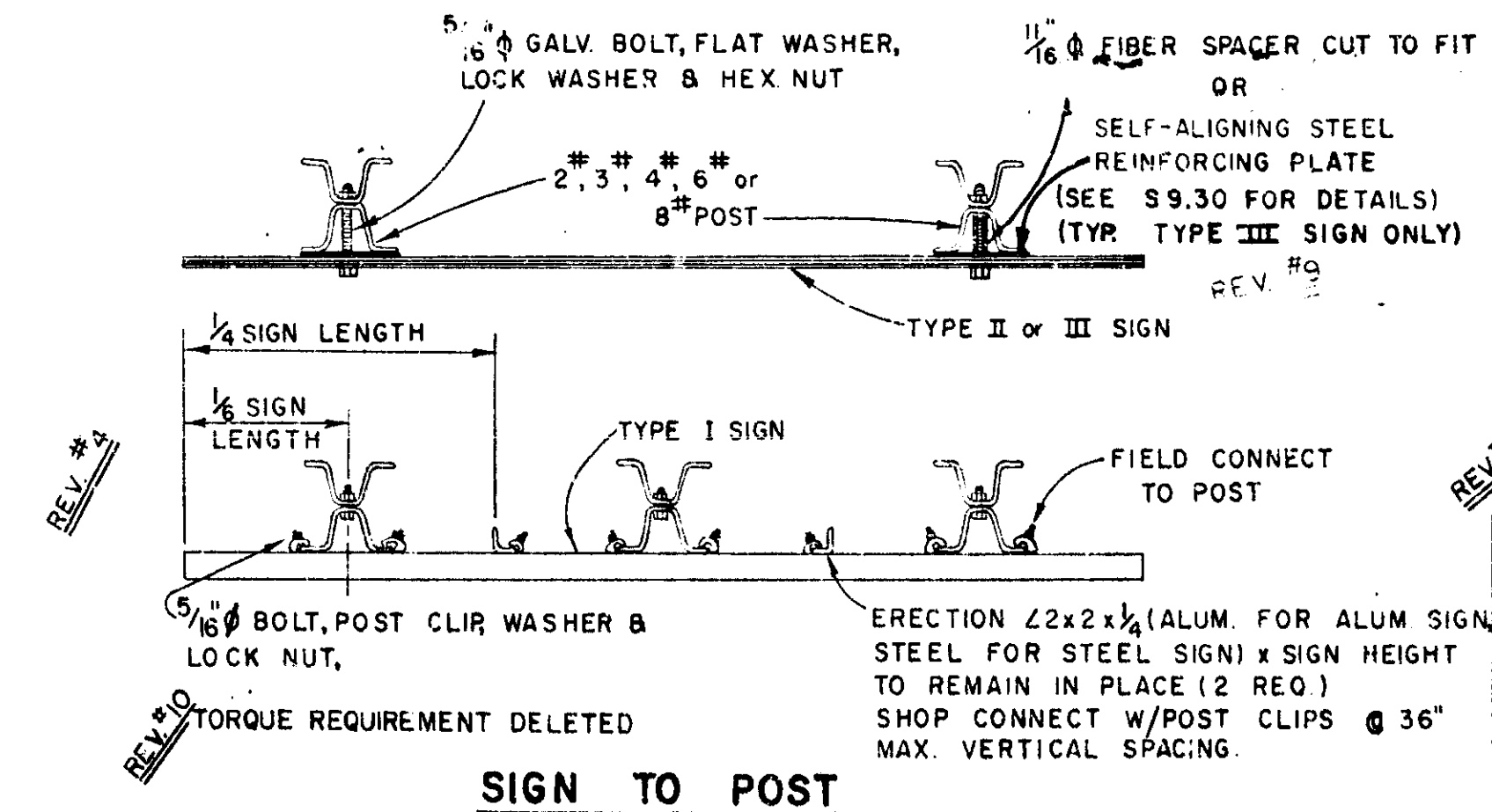
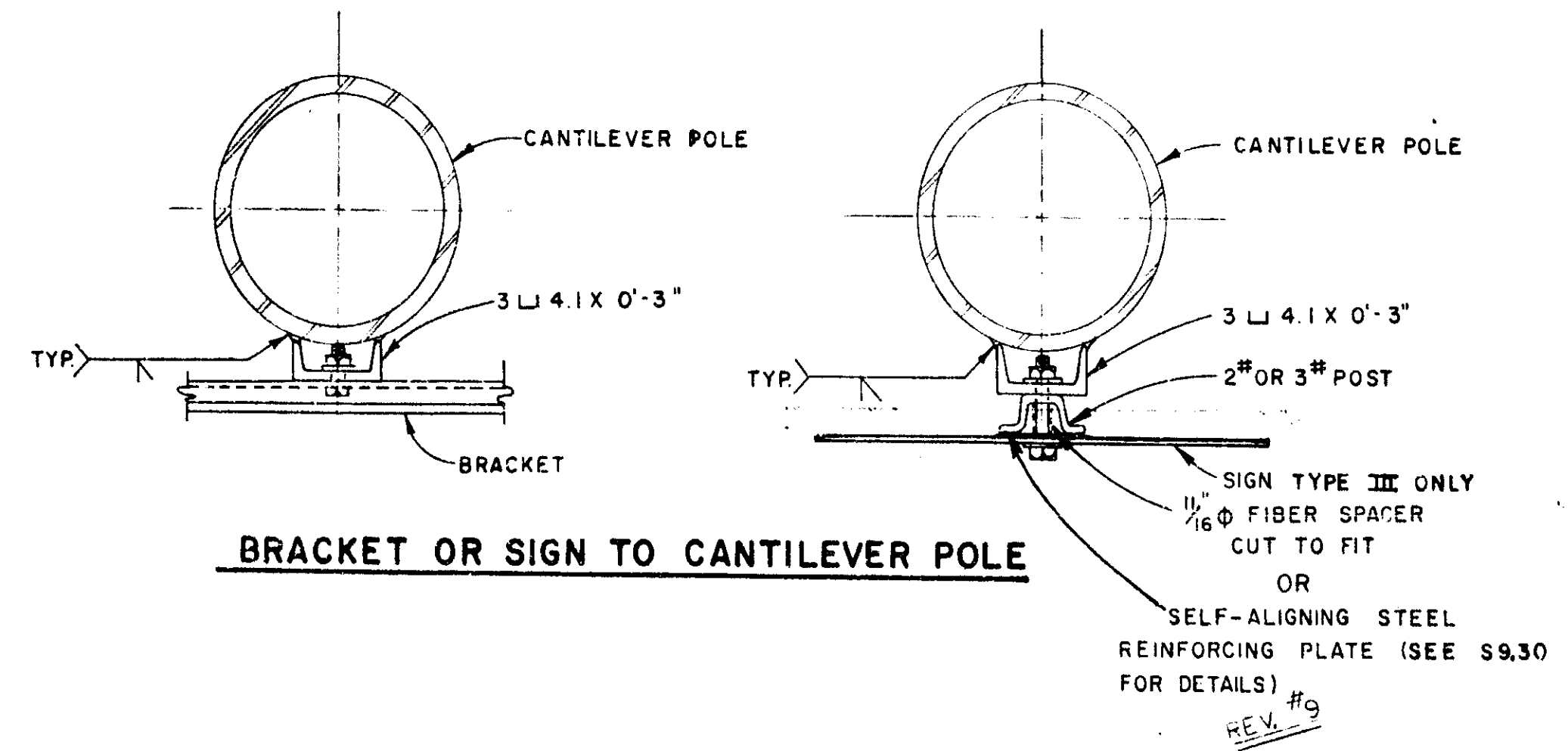
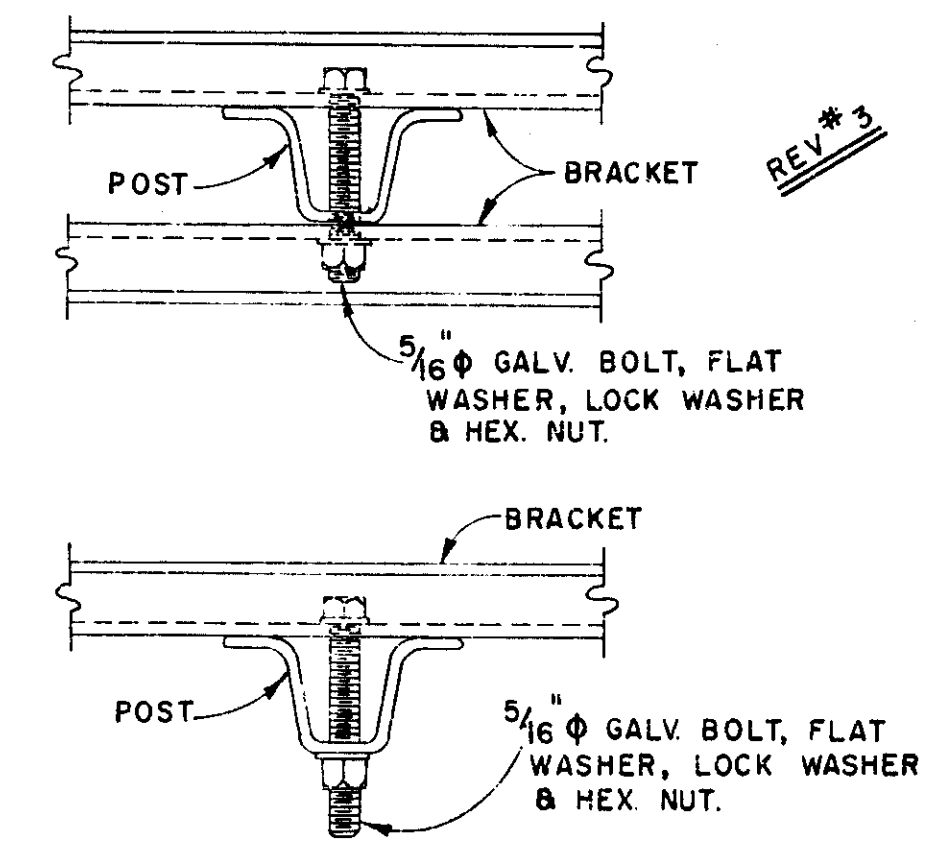
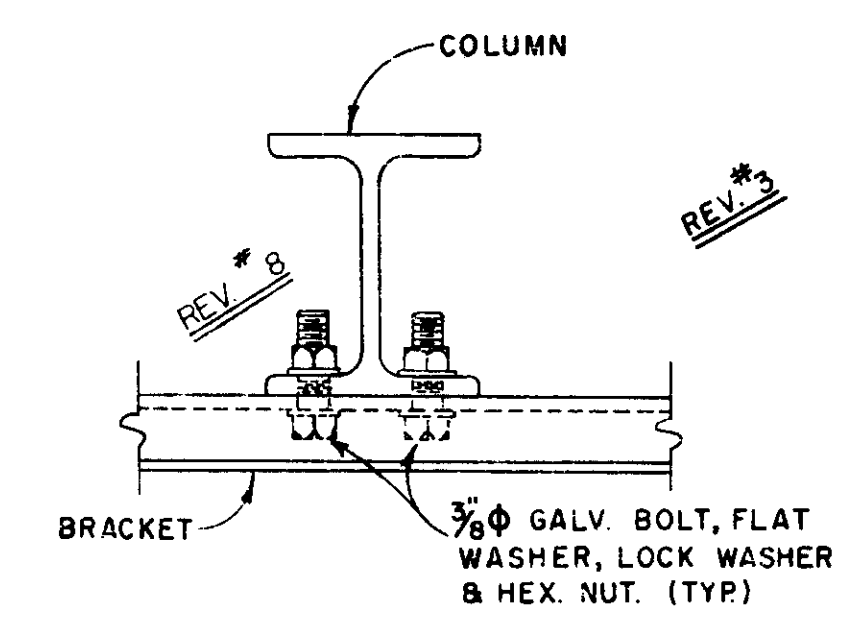
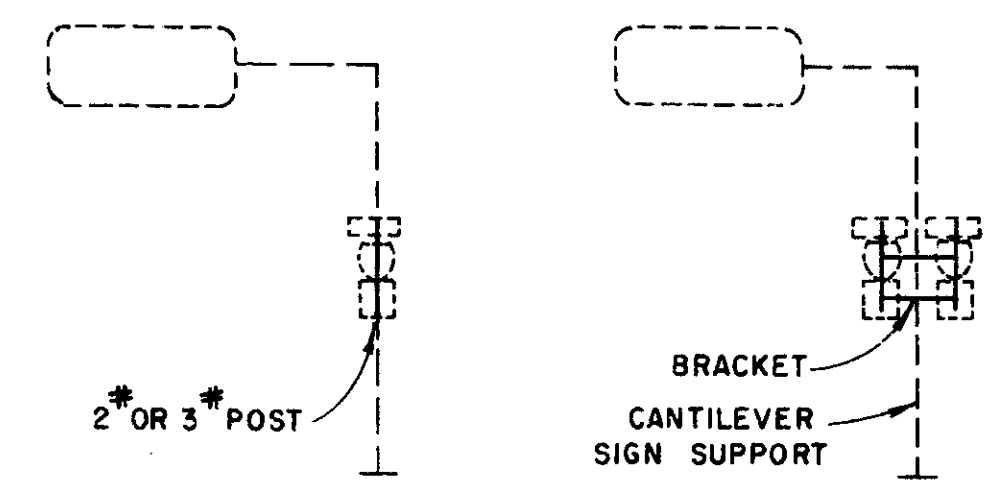
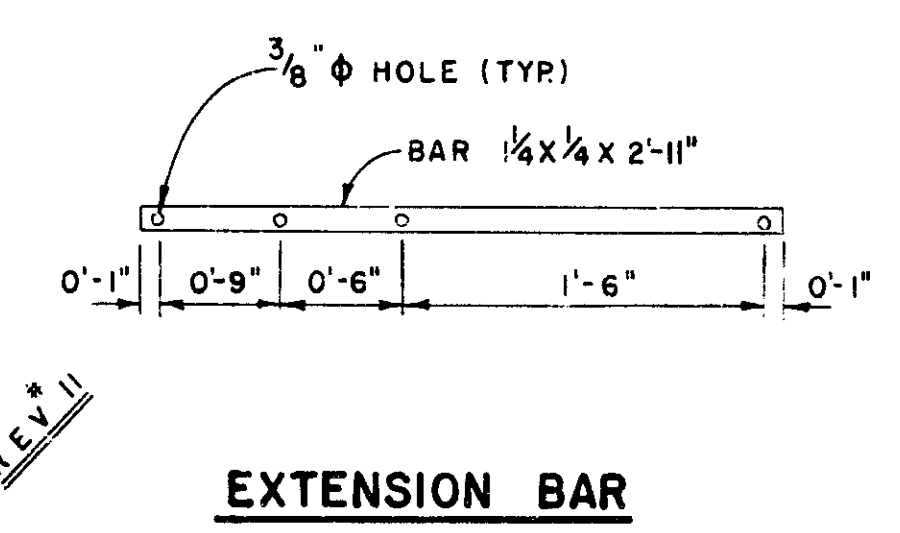
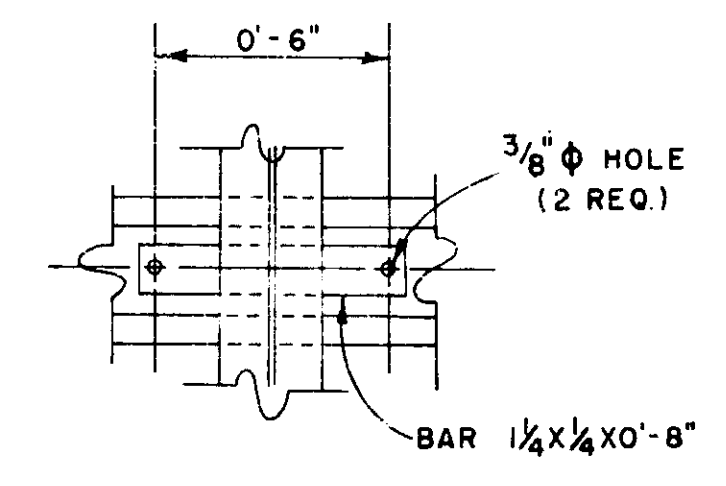
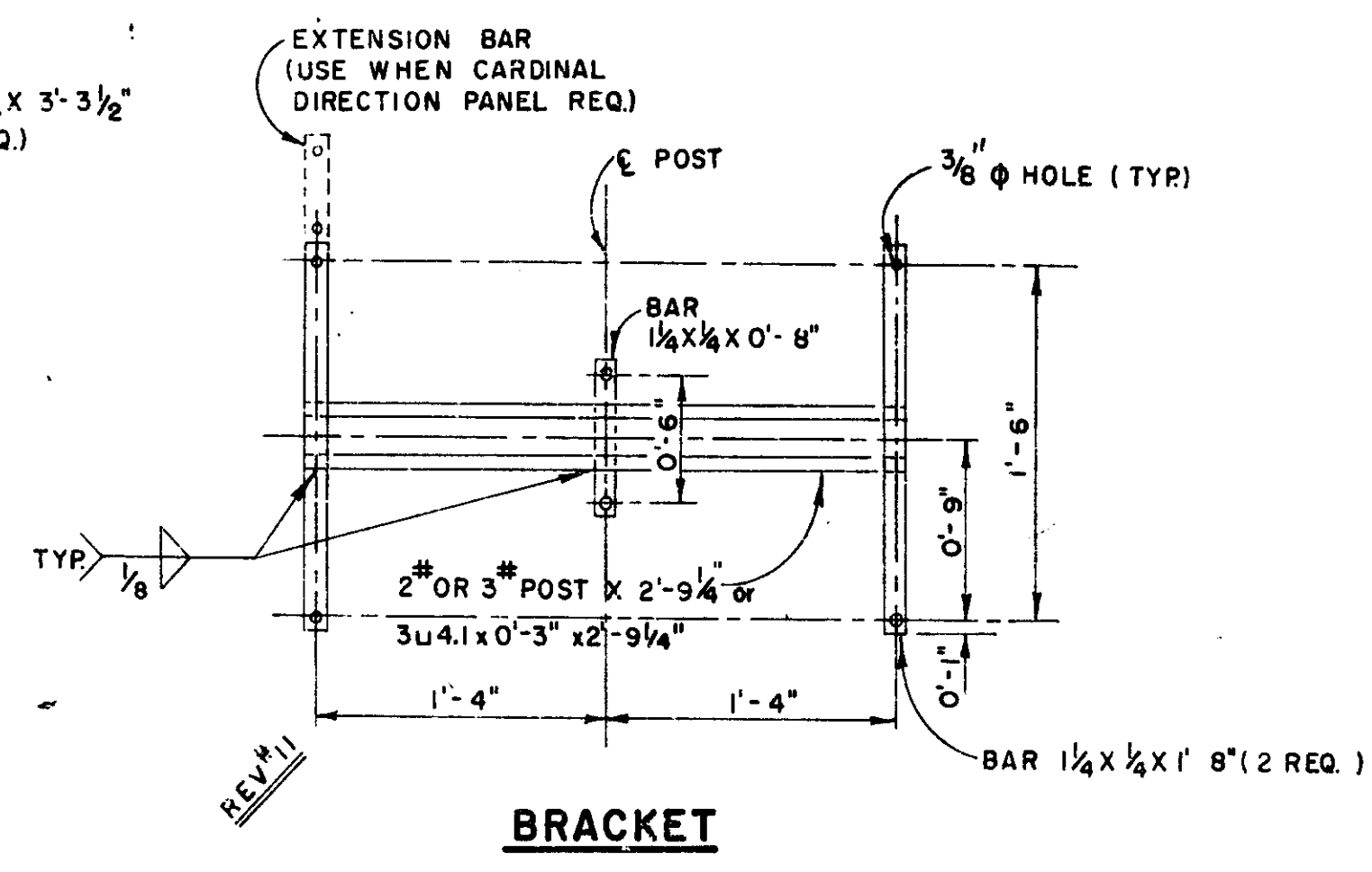
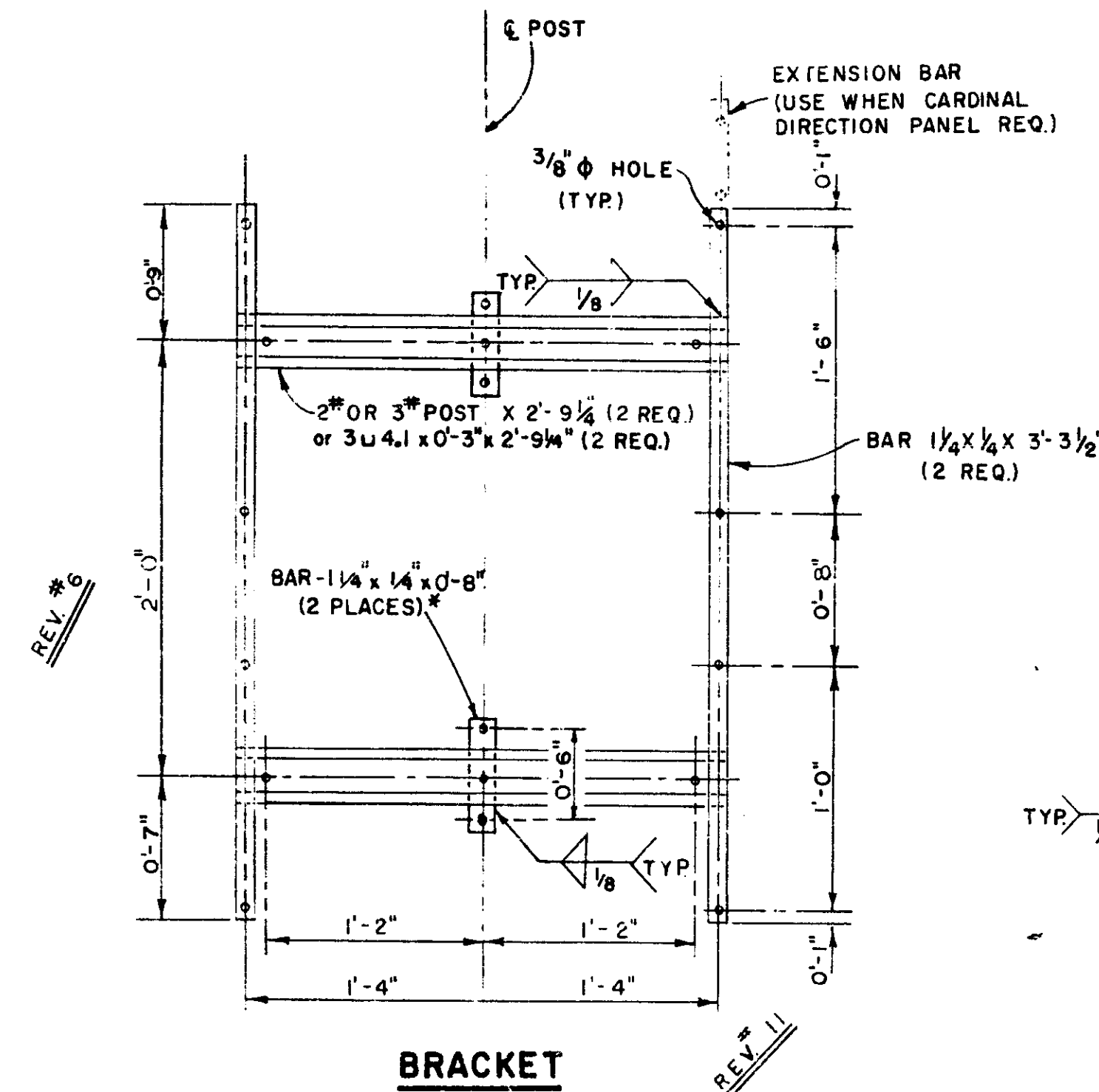
DESIGNED BY	W.C.G.	8-7-75
CHECKED BY	L.W.P.	8-13-75
SHEET	1F	OF

16091

05793A



ROUTE MARKER ASSEMBLY TYPICAL INSTALLATIONS



NOTE:

1. ALL CONNECTIONS ARE INCIDENTAL TO "SIGN"
2. ALL STEEL PARTS SHALL BE GALVANIZED.
3. FOR SIGN CONNECTIONS TO WOOD SUPPORTS
SEE PLAN S330
4. USE BAR FOR BRACKET WHEN "STRAPPING CONNECTION
TO POLE" (S9.30) IS USED

TYPICAL CONNECTIONS

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
MISCELLANEOUS
SIGN CONNECTION DETAILS

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1		1-64	
2		6-64	
3	PIGGYBACK CONN. DELETED, VIEW 5 ADD 4-14-66 G.R.H.		
4	1/8" POSTS ADD TO SIGN TO POST VIEW 4-11-67 T.M.W.		

DESIGNED BY	Russman	DATE	4-14-66
DRAWN BY	G.R.H.		
CHECKED BY	T.R.K.	DATE	4-18-66
IN CHARGE	W. J. H.		
SHEET 16 OF 16			
16091			

12. Holes changed to 3/8"

11. BRACKET REDESIGNED, NOTE #4 ADDED,
EXTENSION BAR CHANGED, ALTERNATE
BRACKET MATERIAL PROVIDED 8-72

12. Sign to post, Bracket to column & post
Bolts changed from 3/8" to 5/16"

5. CHANGE 4-SIGN CLUSTER MOUNTING
ARRANGEMENT 11-29-67 KGP

6. BRACKET DIMENSIONS CHANGED 2-13-69 T.M.W.

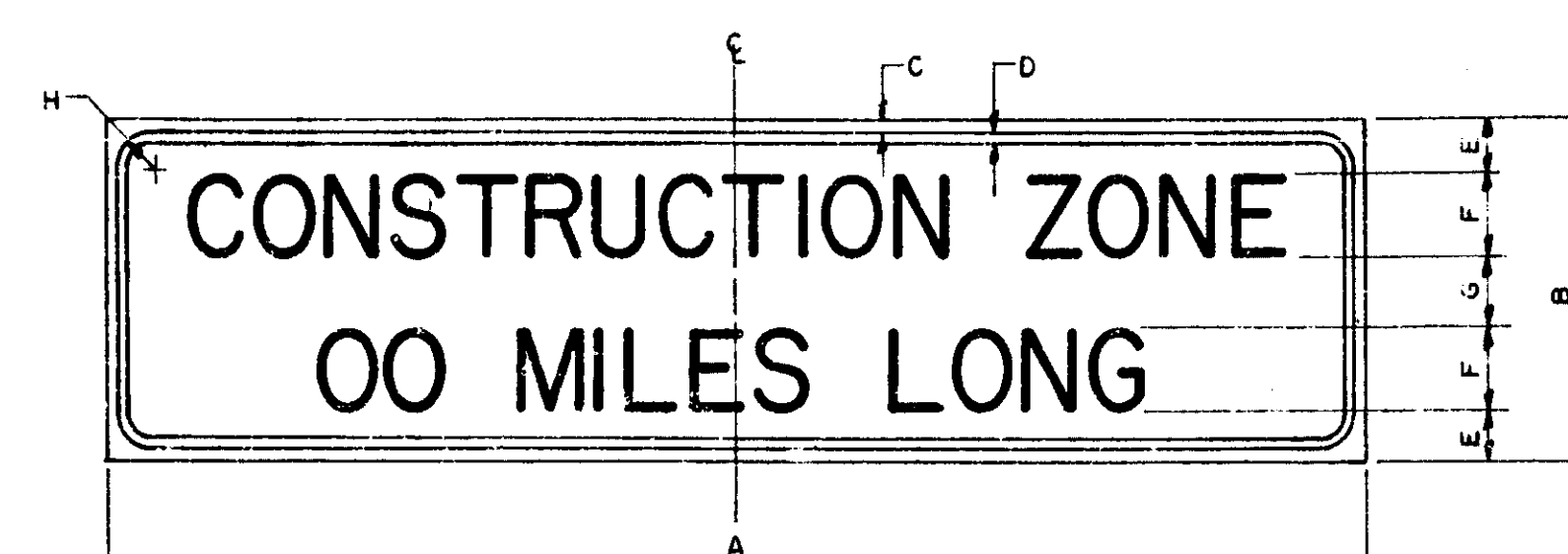
7. NOTE #3 ADDED 11-68 T.C.D.

8. SECOND BOLT ADDED 2-71 KJO

9. STEEL REINFORCING
PLATE ADDED 3-71 W.J.H.

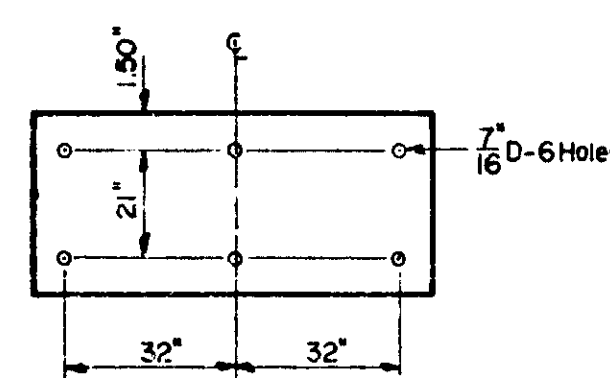
10. TORQUE REQUIREMENT DELETED

05793A



PANEL	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
—	96	24	0.38	0.62	3.50	7.00	3.00	112

DETAIL OF SIGN



SUPPORT HOLE PLACEMENT

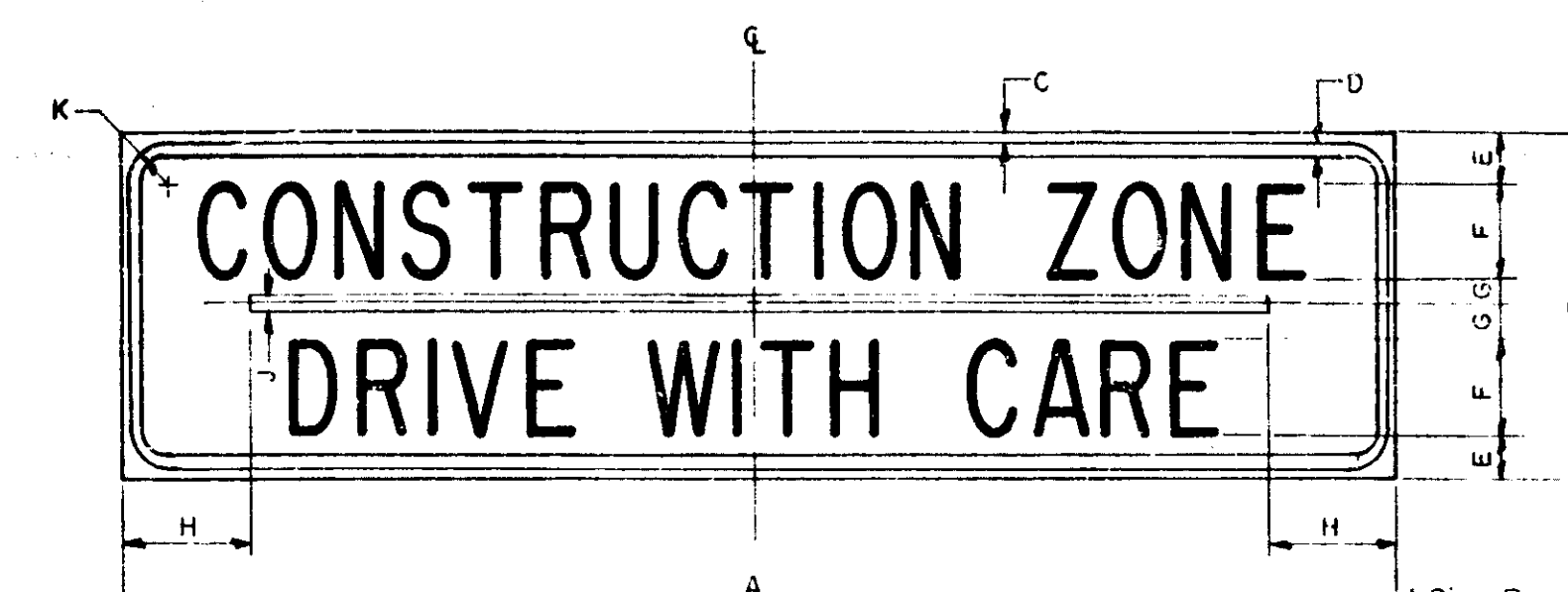
SPECIFICATIONS

1. Sign Panel: Type II, 5/8" Plywood or approved equal.
2. Sign Face: Type B,
 - (a) Legend: Series "C" letters of the height indicated.
 - (b) Color: Black letters and border on an orange background.
 - (c) ReflectORIZATION: Orange sheeting.

NOTES: 1. All letters and spacing between letters shall be in accordance with standards prepared by the FHWA
2. The legend shall be optically centered horizontally on the sign.

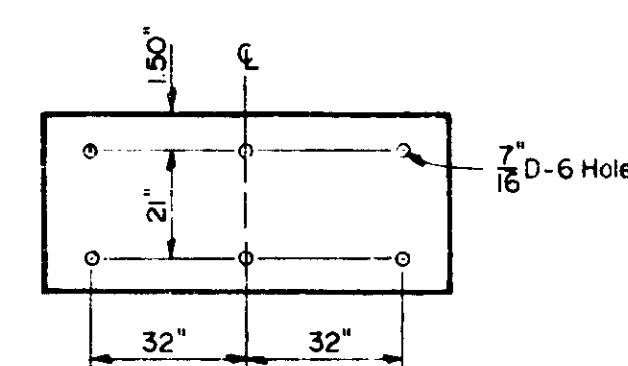
REVISIONS		
NO	DESCRIPTION	DATE
1	Redrawn - Sign Design Changed	4/74

AUTH. NO.	DRAWN	G20-1 LENGTH OF CONSTRUCTION ZONE SIGN
CONT. SEC.	DATE	
REP.	SCALE	



PANEL	DIMENSION (INCHES)									
	A	B	C	D	E	F	G	H	J	
96	24	0.38	0.62	3.00	7.00	2.00	10	100		

DETAIL OF SIGN



SUPPORT HOLE PLACEMENT

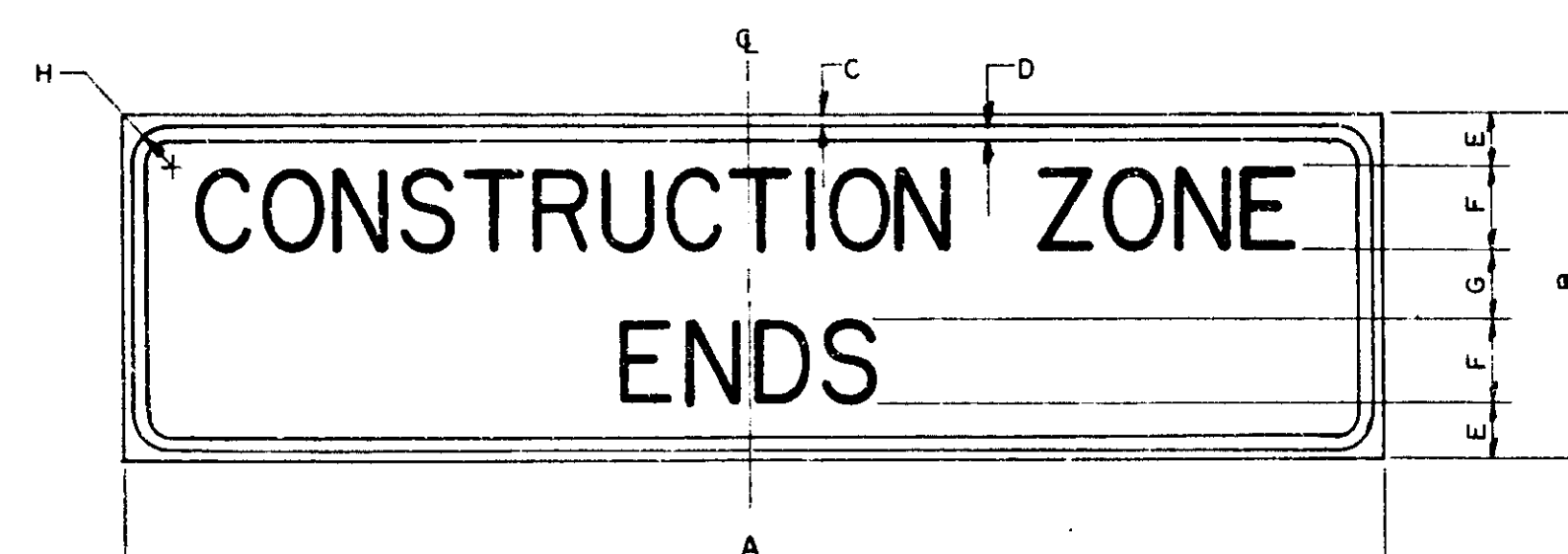
SPECIFICATIONS

1. Sign Panel: Type II, 5/8" Plywood or approved equal.
2. Sign Face: Type B,
- (a) Legend: Series "C" letters of the height indicated.
- (b) Color: Black letters, divider bar and border on an orange background.
- (c) Reflectionization: Orange sheeting.

NOTES: 1. All letters and spacing between letters shall be in accordance with standards prepared by the FHWA.
2. The legend shall be optically centered horizontally on the sign.

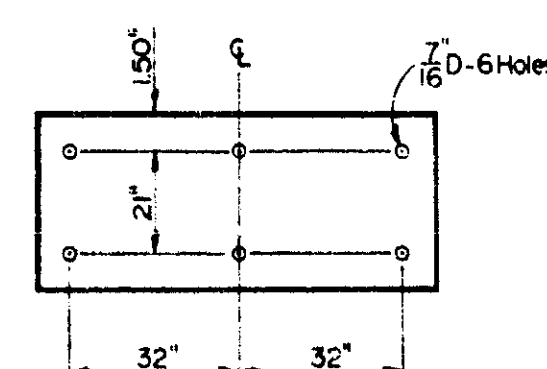
[illegible]

AUTH: NGA REF: 12/73 DATE: NONE	G20-1a CONSTRUCTION ZONE SIGN
---------------------------------------	----------------------------------



PANEL	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
1	96	24	0.38	0.62	3.50	7.00	3.00	112

DETAIL OF SIGN



SUPPORT HOLE PLACEMENT

SPECIFICATIONS

1. Sign Panel: Type II, 5/8" Plywood or approved equal.
2. Sign Face: Type B,
- (a) Legend; Series "C" letters of the height indicated.
- (b) Color; Black letters and border on an orange background.
- (c) Reflectorization; Orange sheeting

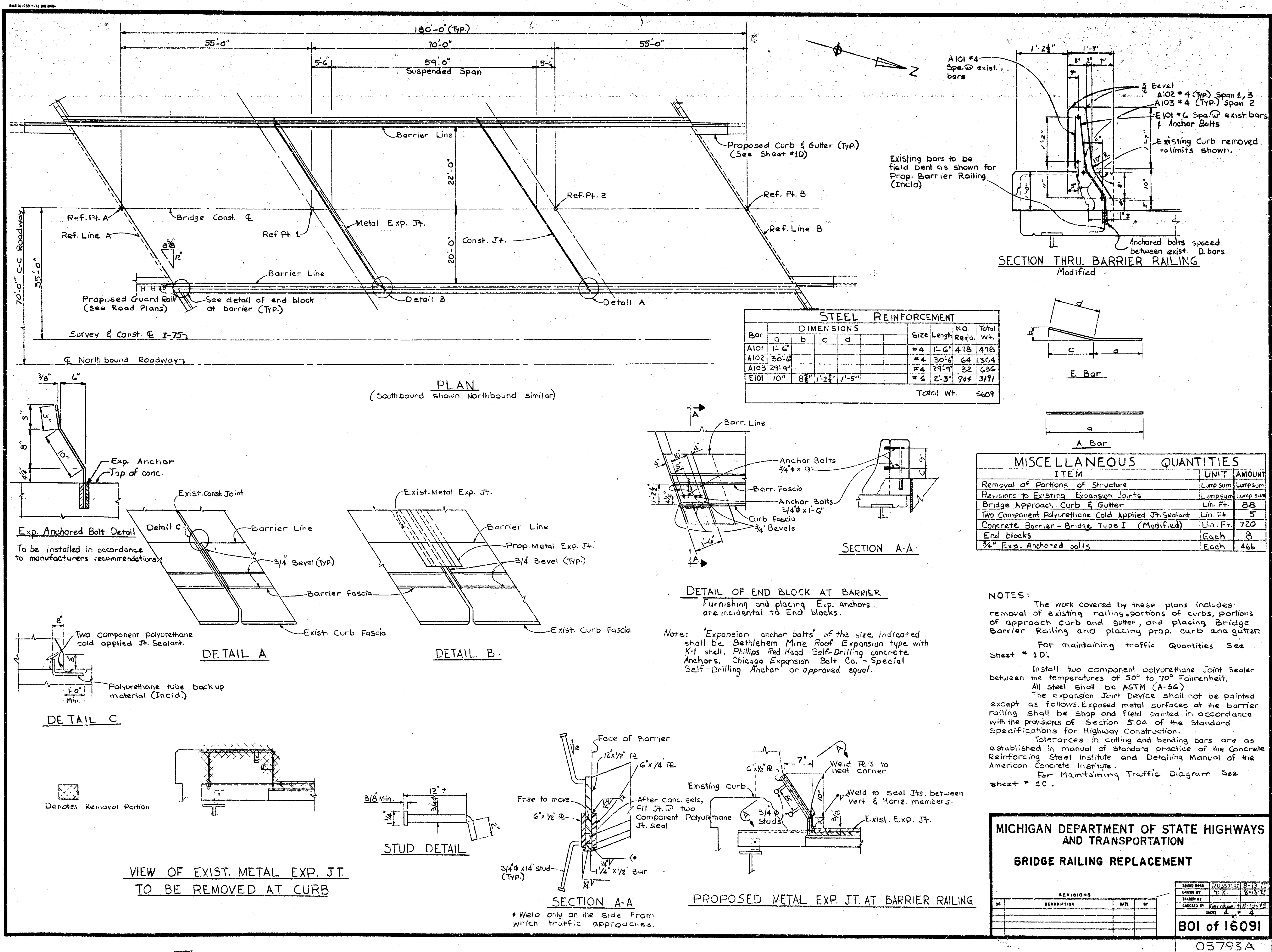
NOTES: 1. All letters and spacing between letters shall be in accordance with standards prepared by the FHWA.
2. The legend shall be optically centered horizontally on the sign.

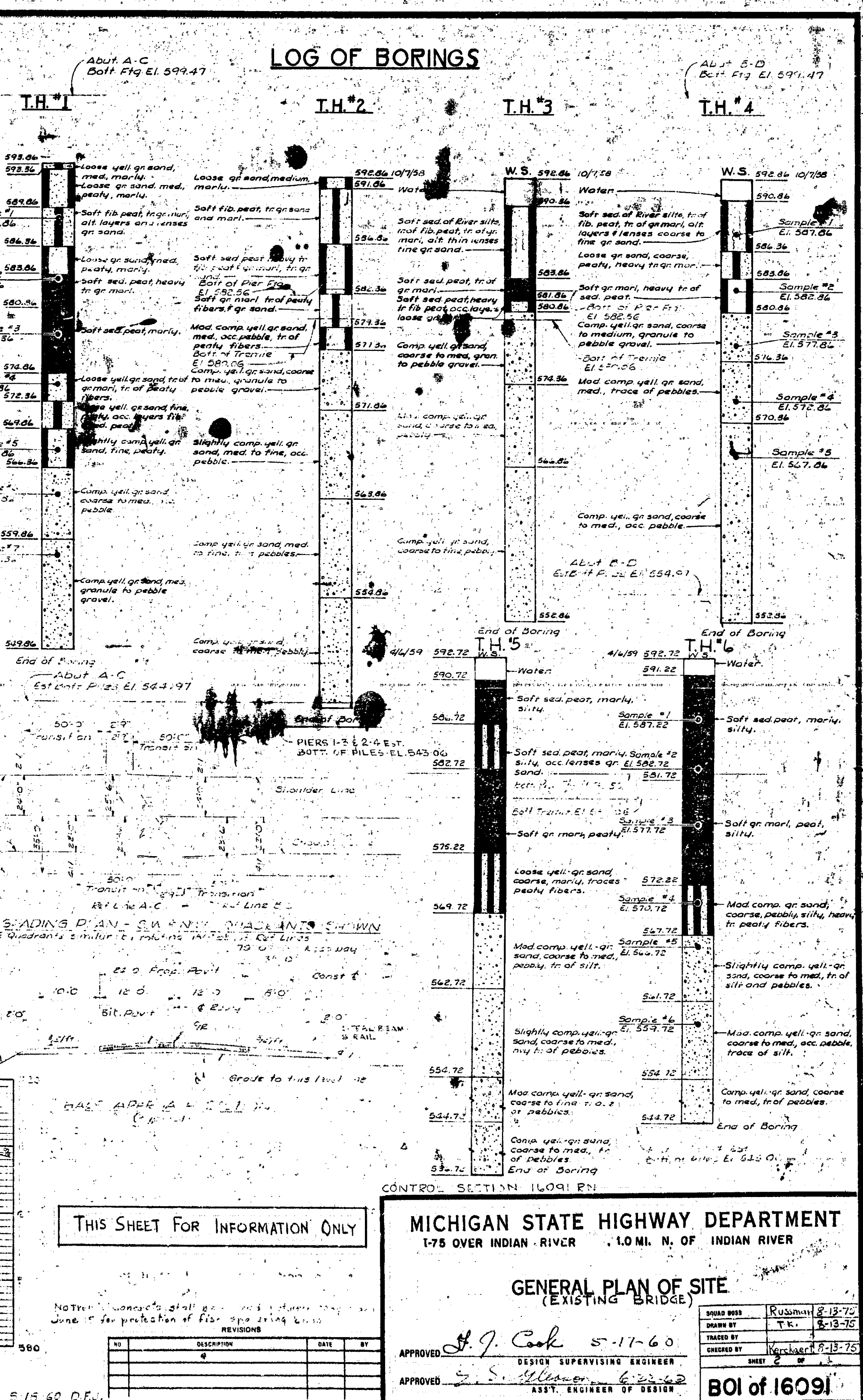
REVISIONS		
NO.	DESCRIPTION	DATE
1	Redrawn - Sign Design Changed	4/74

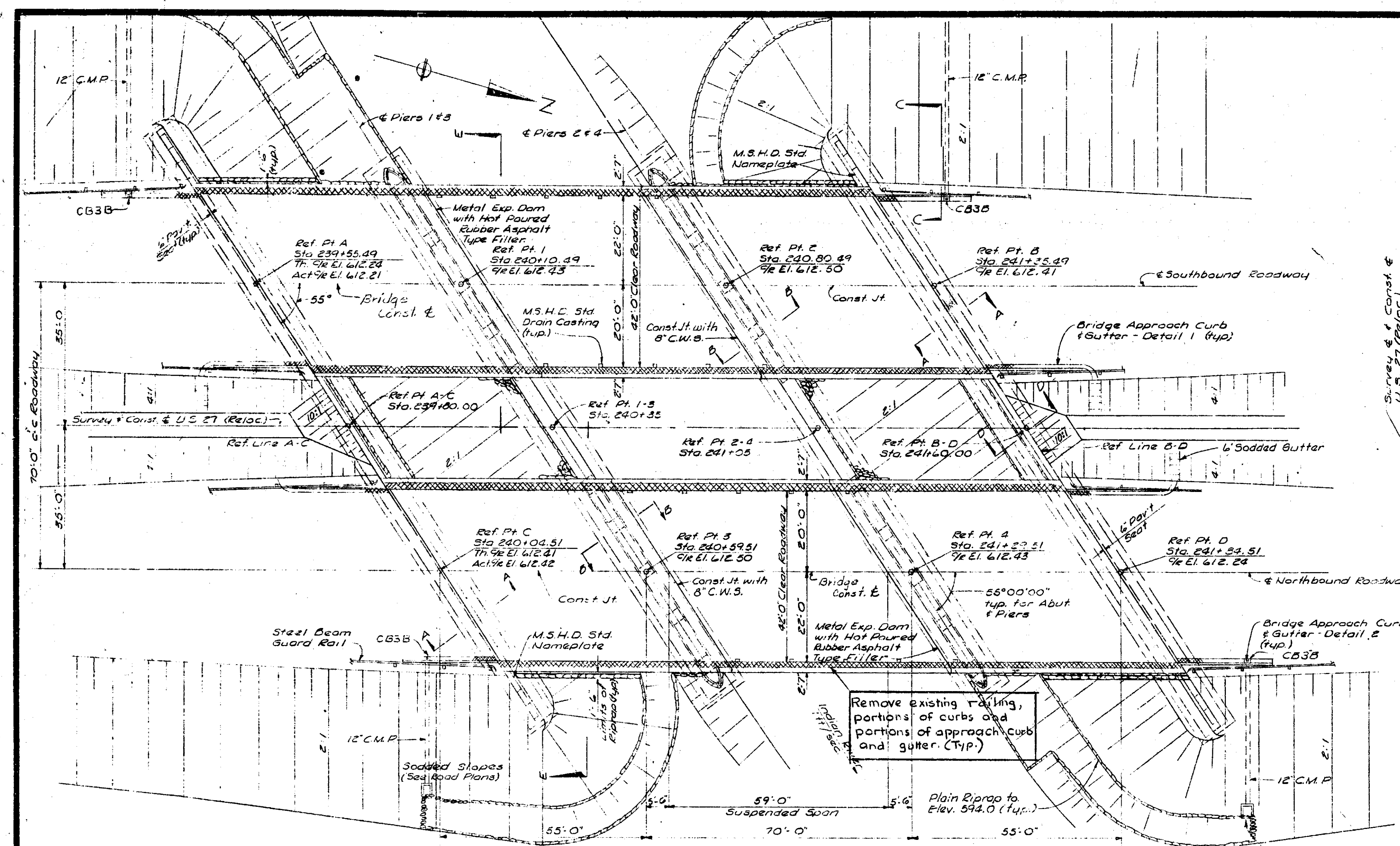
JCT 12/73 NONE	G20-2 CONSTRUCTION ZONE ENDS SIGN
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MICHIGAN DEPARTMENT OF STATE HIGHWAYS
AND TRANSPORTATION

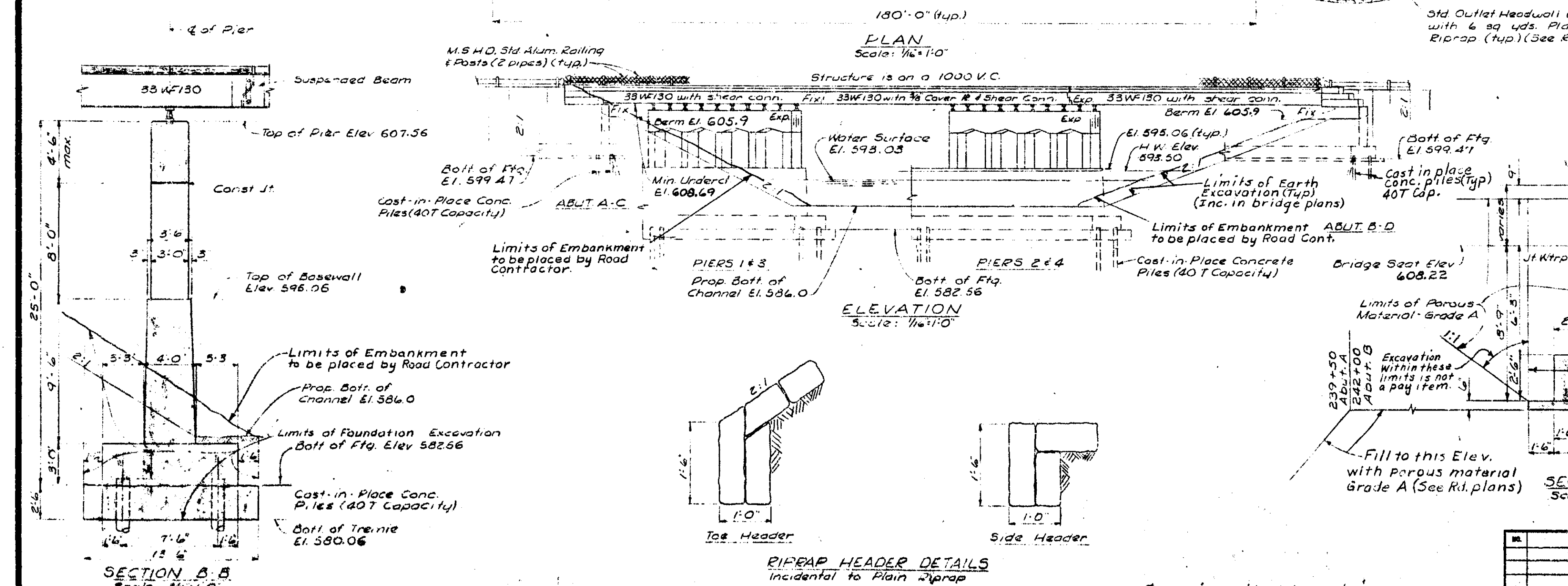
CONSTRUCTION ZONE SIGN DETAILS



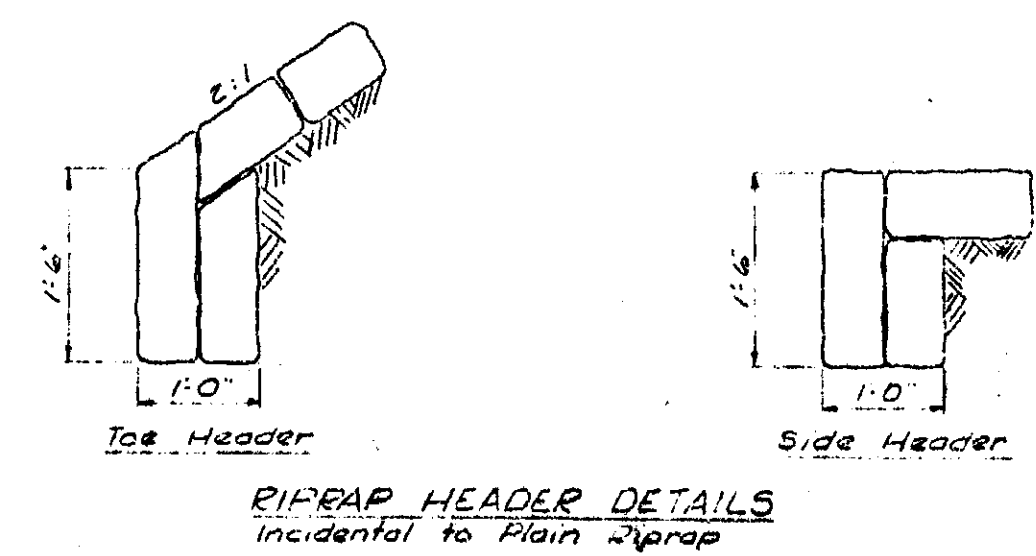




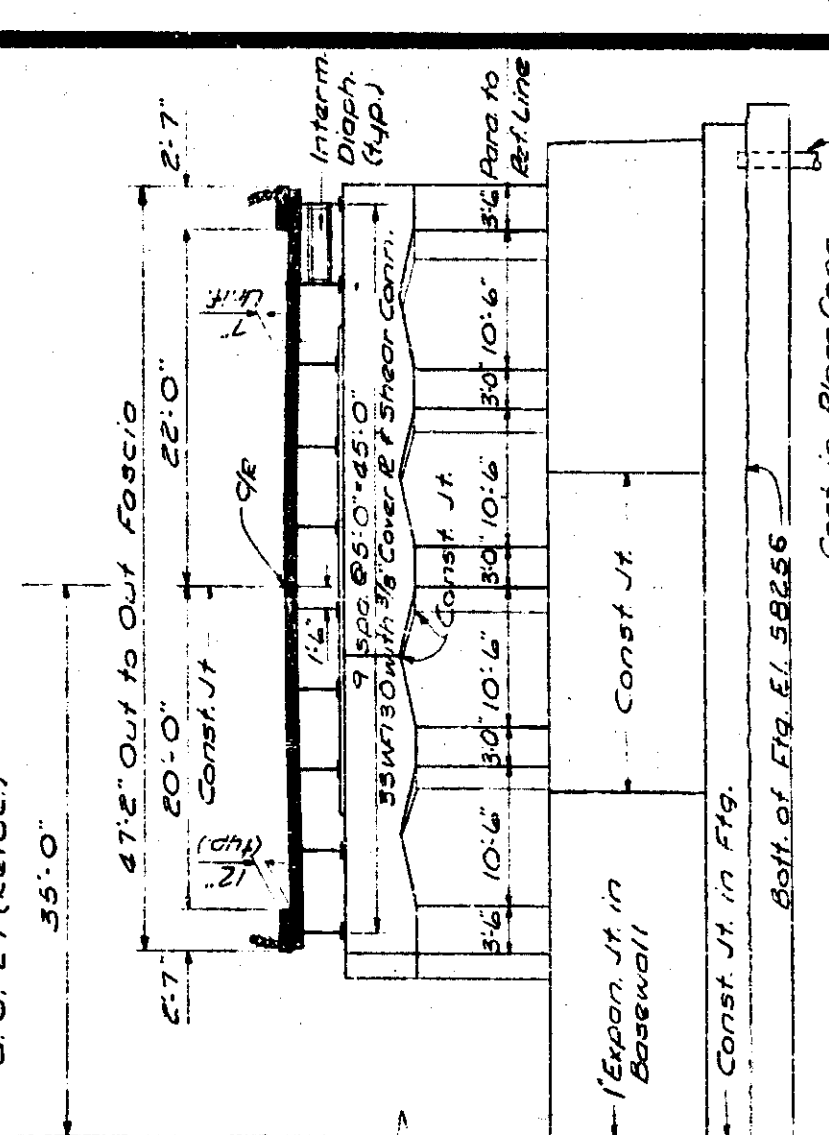
PLAN
Scale: 1/4" = 1'-0"



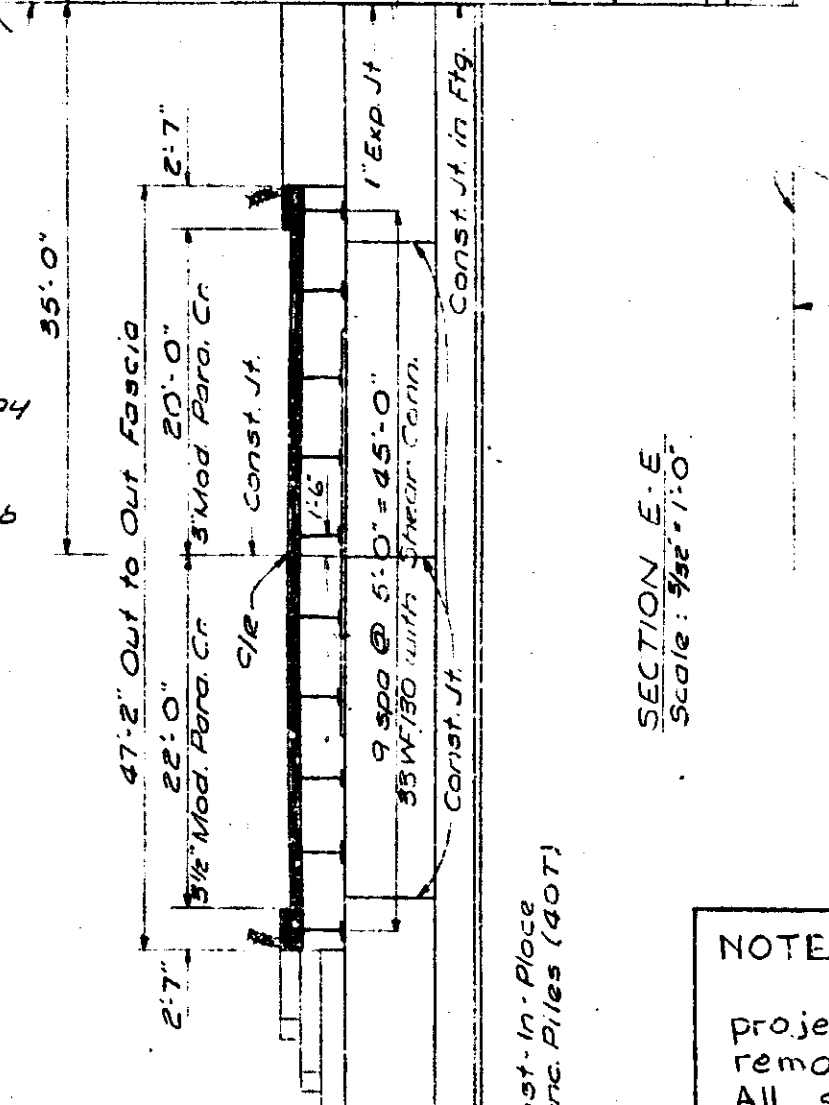
ELEVATION
Scale: 1/4" = 1'-0"



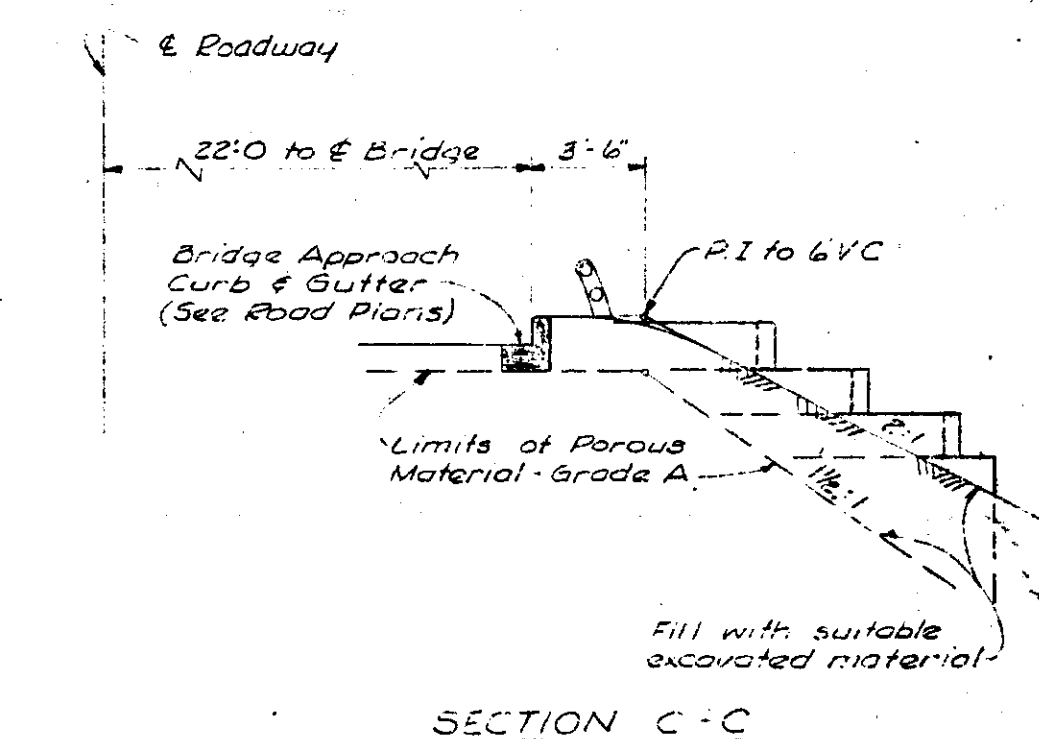
PIPE-HEADER DETAILS
Incidental to Plain Riprap



SECTION D-D
Scale: 1/4" = 1'-0"



SECTION E-E
Scale: 1/4" = 1'-0"



SECTION C-C
Scale: 1/4" = 1'-0"

NOTES:

Proposed work to be done under this project as indicated on this sheet is the removal of portion of the existing structure. All such work is indicated by a note enclosed in a box to differentiate it from work involved in the original contract.

Removal Portions

In removing existing concrete, care shall be exercised to see that the reinforcing bars which are to be embedded in new concrete are not damaged.

MISCELLANEOUS QUANTITIES		
Item	Unit	Amt.
Plain Riprap	Sq. Yds.	1940
Earth Excavation	Cu. Yds.	1506

CONTROL SECTION 16091RN

MICHIGAN STATE HIGHWAY DEPARTMENT
175 OVER INDIAN RIVER, 1.0 MI. N. OF INDIAN RIVER

EXISTING BRIDGE
GENERAL PLAN OF STRUCTURE
(REMOVAL PORTIONS)

APPROVED: *J. J. Cook* 5-17-60
DESIGN SUPERVISING ENGINEER

APPROVED: *E. S. Blomquist* 6-22-60
ASST. ENGINEER OF DESIGN

BOI of 16091
05793A